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Office of Analysis and Evaluation

Nutrition and Food Security in the Food Stamp Program

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Nutrition and Food Security in the Food Stamp Program

Edited by Daryl Hall and Mike Stavrianos
Mathematica Policy Research, Inc.

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The Authors

Margaret Andrews
Dr. Andrews is an analyst in the Office of Analysis and Evaluation (OAE) at the Food and Consumer Service (FCS). In addition to her involvement with the FCS food security measurement effort, she is currently serving as project officer for a study in which nationally representative data will be collected and analyzed to assess customer service issues in the Food Stamp Program (FSP). Dr. Andrews has also directed evaluations of electronic benefit transfer (EBT) demonstrations in Maryland and Ohio, and she has been involved in various research efforts to measure and evaluate FSP participants' access to food retailers

Susan Bartlett
A senior policy analyst at Abt Associates, Dr. Bartlett has been involved in evaluating a variety of FSP-related initiatives. She recently completed the study of expedited service summarized in this compendium. Before that, she directed a study of the food stamp application process, exploring factors that encourage and discourage persons from completing the process. She also analyzed state-to-state variation in food stamp certification costs and evaluated the impact of the system on food stamp recipients for the initial EBT demonstration.

Gary W. Bickel
Dr. Bickel, an economist at FCS, has studied the phenomenon of poverty in the U.S. from several different settings. For the past three years, he has played a major role in FCS' development of the first direct measures of food insecurity and hunger in the U.S. At FCS, he was also responsible for the initial feasibility study of the EBT system for food stamps and for the development of a model to estimate the size of the WIC-eligible population. Previously, Dr. Bickel served on a U.S. Senate subcommittee concerned with poverty issues, held associate professorships at Cornell and Colorado universities, and provided social science research support to the original Legal Services Program.

Steven Carlson
Director of the Family Programs staff in OAE at FCS, Mr. Carlson has devoted his career to policy research and to the analysis and evaluation of

domestic food assistance programs, primarily the FSP. He currently leads a multidisciplinary staff with research interests in welfare reform and coordination, EBT systems, program operations, and nutrition education and monitoring.

Lynn Daft

A senior partner of Abel, Daft, Earley & Ward International, Dr. Daft has conducted research for more than 20 years in farm policy, economic development, dairy markets, and domestic food programs. As associate director of the White House Domestic Policy staff during the Carter Administration, he was the president's principal staff advisor and policy coordinator for agricultural issues. He also supervised analysis of policy and budget issues for the Congressional Budget Office, the Office of Management and Budget, and the office of the Secretary of Agriculture.

Kathryn H. Fleming

Dr. Fleming is a senior nutritionist at Technical Assessment Systems (TAS). She is an expert in food consumption research, survey design, dietary data collection methodology, and data analysis. At TAS, Dr. Fleming was the principal investigator for the Food Guide Pyramid component of the Healthy Eating Index. In this project for USDA, the dietary intake of foods as reported in national food consumption surveys was translated into servings of foods based on Food Pyramid groups. Dr. Fleming was also principal investigator for the extant data analysis component of the FCS-funded Barriers to Good Nutrition project—an examination of the relationship between household and individual characteristics, food expenditure patterns, diet quality, and nutrient intake.

Eileen Kennedy

Dr. Kennedy is executive director of the Center for Nutrition Policy and Promotion, USDA. Before joining USDA, Dr. Kennedy was involved in research on the food security, nutrition, and health effects of a range of government food and agriculture policies in developing countries; much of Dr. Kennedy's international work focused on Sub-Saharan Africa. Dr. Kennedy worked with colleagues at Mathematica Policy Research in developing the Healthy Eating Index.

Bruce Klein

An economist at the Center for Nutrition Policy and Promotion, Dr. Klein is a member of an interdisciplinary team that disseminates new scientific information and evaluates nutrition promotion. In his previous position at FCS, he analyzed food assistance policy and programs, and he led the design team for the new USDA food security and hunger questionnaire.

Dr. Klein is co-author, with William Spriggs, of *Raising the Floor: The Effect of the Minimum Wage on Low-Wage Workers*. His other publications deal mainly with issues of food security and the working poor.

Theodore F. Macaluso

Dr. Macaluso is chief of the Evaluation Research Branch in the OAE at FCS. He supervises the staff who design, award, and manage from 10 to 15 survey research, econometric, and experimental-design research studies a year. His recent work concentrates on the agency's relationship with the food retailing industry (including efforts to improve participants' access to retailers that stock quality food at affordable prices and to reduce taxpayer exposure to retailers who engage in food stamp trafficking). Dr. Macaluso is also an expert in technology (EBT, automated case management, and statistical risk-targeting systems) and in the characteristics and needs of the low-income elderly.

Richard Mantovani

Dr. Mantovani, a technical director at Macro International Inc., directed the Retailer Characteristics Study, which addresses availability and access for FSP participants. He has also contributed to a variety of other human needs-related studies, including the current evaluation of Automated Finger Imaging in New York State and an income quality control study of tenants in housing subsidized by the Department of Housing and Urban Development.

James C. Ohls

Dr. Ohls is a senior fellow at Mathematica Policy Research, Inc. He has directed several major studies of food and nutrition policy, including evaluations of the SSI/Elderly Food Stamp Cashout Demonstration, the Food Stamp Simplified Application/Standardized Benefits Demonstration, and the San Diego Food Stamp Cashout Demonstration. Dr. Ohls is the co-author, with Dr. Harold Beebout, of *The Food Stamp Program: Design, Tradeoffs, Policy and Impacts*, published in 1993.

Carole Trippe

A researcher at Mathematica Policy Research, Inc., Ms. Trippe specializes in the use of microsimulation models to conduct research on FSP policy issues. Ms. Trippe directs a project for FCS in which these models are developed to estimate FSP participation rates, trends in these rates, and to examine the impact of proposed changes to the FSP.

James B. Welsh
President of Geosocial Resources, Inc., Mr. Welsh pioneered the adaptation of geographic information systems (GIS) to human services. From 1989 to 1991, he demonstrated uses of GIS in the FSP under a small grant from FCS. Since then, he has extended the uses of this technology to public assistance, Medicaid, and other programs by creating systems for administrators, analysts, and caseworkers.

Introduction

THE FOOD STAMP PROGRAM

The Food Stamp Program (FSP), administered by the U.S. Department of Agriculture's Food and Consumer Service (FCS), is a central component of America's national nutrition safety net, providing monthly benefits to about 27 million participants in nearly 11 million households nationwide. Through the FSP, over $23 billion in annual benefits is distributed to nearly all low-income households that meet income, asset, and employment-related eligibility requirements. Unlike many other welfare programs, the FSP has few categorical requirements for eligibility, such as the presence of children, or elderly or disabled individuals in a household. As a result, the program supports a wide range of needy persons, many of whom are not eligible for other forms of assistance.

The goals of domestic food assistance policy have evolved substantially since the first food stamp plan operated from 1939 until 1943, during the Depression. While a goal of this plan was to alleviate hunger, its primary purpose was to stabilize agricultural prices by stimulating consumption of surplus farm commodities. In the 1960s, the program was revitalized—first through a 1961 Executive Order by President Kennedy, which created a number of pilot food stamp projects, and then with the passage of the Food Stamp Act of 1964. Still, participation in the program remained optional for states and localities; benefit levels varied widely across states; and there was a purchase requirement: participants had to pay a portion of their income in order to receive benefits.

The passage of the Food Stamp Act of 1977 marked the beginning of the modern FSP. Through the act, the purchase requirement was eliminated, making the program more accessible to low-income households because they no longer had to contribute in advance to participate. This recent reform diminished the FSP's role in supporting agricultural prices and made the program's primary goal, as stated in the Food Stamp Act, to permit low-income households to obtain a more nutritious diet by increasing their food-purchasing power.

"This volume of research papers offers an overview of current research on . . . improving access to and participation in the FSP, and measuring nutrition in the FSP."

This volume of research papers offers an overview of current research on two topics critical to the program's success in achieving its goals:

improving access to and participation in the FSP, and measuring nutrition in the FSP. Of the five papers, three focus on access and participation. The first in this set presents the latest trends in FSP participation rates among those eligible for benefits; the second examines the effectiveness of specific provisions to expedite service to those in greatest need; and the third investigates access of FSP participants to food retailers. The two remaining papers address the measurement of food security and nutrition. This introduction provides the policy context for the questions and issues raised in the research papers.

PARTICIPATION IN AND ACCESS TO THE FSP

The FSP has few categorical eligibility requirements and hence offers assistance to a large and diverse population of low-income households. The size of the eligible population is influenced by many factors, including changes in program rules, the economy, and demographics. At any given time, some percentage of these eligible households will participate in the FSP. The ratio of participants to eligibles, or participation rate, provides a useful measure of the program's success at reaching its target population.

Participation rates can reveal other useful information as well. For example, not all subgroups of the eligible population participate at the same rate—demographic and economic factors can influence a household's decision as to whether or not to participate. Comparing participation rates across subgroups can therefore help program administrators identify unmet needs and focus program outreach efforts. Participation rates vary not only by subgroup but also over time. These trends offer insight into the impact of outreach efforts, and into changes in program rules and the economy on FSP participation.

Measuring FSP Participation

The paper in this volume written by Carole Trippe presents the latest trends in FSP participation rates among those eligible for benefits. This study used data from the Survey of Income and Program Participation (SIPP) on food stamp eligibles and FSP administrative data on food stamp participants. The results show that overall participation rates have risen substantially since 1989 because of a surge in participation among the eligible population. Almost 6 million new participants joined the program between January 1989 and January 1992, compared with an increase of only 1.9 million eligibles during that time. As a result, the participation rate rose from 59 to 74 percent.

Participation rates and trends in rates varied across demographic and economic subgroups. Nearly all eligible children participated in the FSP in 1992, but only one-third of eligible elderly persons did so. Households

headed by African Americans were more likely to participate, as were households that received AFDC and households that were eligible for a relatively large food stamp benefit. Trends in participation rates for subgroups tended to follow trends for the entire FSP population, increasing by about 15 percentage points between 1989 and 1992. However, rate increases for some groups—such as young children, single adults, and households with no income—outstripped the average. Conversely, participation rates increased only modestly among elderly persons, households with income above the poverty level, and households eligible for only a small FSP benefit.

Identifying and Overcoming Barriers to FSP Participation

Throughout the history of the FSP, policymakers have varied their emphasis on identifying the reasons that certain groups participate at lower rates and on developing outreach strategies to boost these rates. In 1971, Congress passed legislation requiring state food stamp agencies to inform low-income households of their potential eligibility for the program. But Congress weakened this mandate in the late 1970s and, in 1981, eliminated federal funding for outreach efforts.

Surveys conducted in the 1980s indicate that most eligible, nonparticipating households did not participate for one of three reasons: they did not need food stamps, they were unaware that they were eligible, or the perceived costs associated with participation outweighed the benefits. These findings, however, were too general to inform the development of outreach efforts; they did not explain the specific motivations and constraints that shape a household's decision to

In fiscal year 1992, nearly 2.5 million households received expedited service—35 percent of the 7.1 million households approved to receive food stamps during that period. Some 90 percent of expedited service households were eligible for the service because their income and resources were below the established limits. Compared with other food stamp households, these expedited service households were less likely to contain children, less likely to be employed, and tended to have lower income and assets. The remaining 10 percent of expedited service households qualified solely because of the provisions of the McKinney Act.

More than three-quarters of these expedited service applicants in fiscal year 1992 received benefits within five days (as mandated by federal law) compared with only 60 percent in the early 1980s. Despite this progress, there is still room for improvement in the timeliness of expedited service. Some food stamp offices have addressed the issue by screening applicants to determine their eligibility for expedited service before scheduling the certification interview and by interviewing expedited service cases on the same day the applicant first appears in the office. Contrary to the concerns of many policymakers, overpayment errors resulting from expedited service are modest.

Food Stamp Participants' Access to Food Retailers

Researchers have identified several methods to boost participation in the FSP, but even among participants, certain barriers can diminish the program's impact on food-purchasing power. For example, participants may not have access to food retailers that accept food stamps. The importance of access is acknowledged in that the FSP authorizes over 200,000 stores nationwide to accept food stamps. The paper written by Richard Mantovani and colleagues examines whether these authorized retailers are actually accessible to FSP participants.

The study documented in the paper covers eight sites, three in highly urbanized areas, three in smaller metropolitan areas with adjacent rural areas, and two in rural areas with small central cities or towns. In the highly urbanized areas, over 90 percent of recipients lived within one-half mile of a supermarket or large grocery store at the time of the study, and all participants lived within one mile. In two of the three small metropolitan areas and in both rural areas, about 40 percent of participants lived within one-half mile, and about three-quarters lived within one mile of a supermarket or large grocery store. In the remaining small metropolitan area, the distance between participants and retailers was substantial; fewer than half of the participants were within one mile of a retailer, and fewer than two-thirds were within five miles. The authors

conclude that most food stamp recipients live close to an authorized food retailer, but that an inadequate infrastructure can exacerbate the access problem, particularly in geographically remote sections of rural areas.

MEASURING NUTRITION IN THE FSP

Increasing access to and participation in the FSP is a crucial first step in achieving the program goal established by the Food Stamp Act of 1977—to permit low-income households to obtain a more nutritious diet by increasing their food-purchasing power. As mentioned, however, the use of food stamps may not improve a household's nutritional status. For example, a household may reduce its cash food expenditure by the exact amount of the food stamp benefit, yielding no net impact on food purchases. Research has revealed that while food stamps prompt households to reduce cash spending on food, the benefit increases food expenditures on the margin. One study indicates that each additional dollar of food stamps produces a 20- to 45-cent increase in food expenditures (Fraker 1990).

Measuring Dietary Quality

The link between the receipt of food stamps and improved nutrition could also be severed if increased food expenditures do not translate into improved nutritional status. This could occur if, for example, the household uses the extra money to purchase more pre-prepared food or to eat more meals away from home, as these foods tend to have lower nutritional quality than foods prepared at home.

To empirically assess the impact of the program on nutrition, researchers need a reliable measure of dietary quality. In their paper on the Healthy Eating Index, Eileen Kennedy and her colleagues propose such a measure. The Healthy Eating Index combines 10 quantifiable components of a healthy diet into a unidimensional measure of nutritional quality. The index's components include overall fat consumption, saturated fat consumption, cholesterol intake, sodium intake, dietary variety, and the degree to which a person's diet conforms to USDA Food Pyramid serving recommendations for each of the five major food groups.

The authors used the Healthy Eating Index to assess dietary quality in households that participated in the 1989 and 1990 Continuing Survey of Food Intakes by Individuals, in which three days of detailed dietary intake are reported. The results of the assessment indicate that dietary quality is associated with various socioeconomic characteristics. Dietary quality was above average among young children and the elderly, and women tended to score higher than men on the index. In addition, persons with income above 200 percent of poverty scored significantly higher than those with lower incomes, and those with higher levels of education outscored

persons without a high school diploma. The authors suggest that a simplified version of the index, which would not require access to large computer databases, could be used to measure the effects of policy interventions such as nutrition education programs.

Measuring Food Security and Hunger Through the Current Population Survey

The paper in this volume written by Gary Bickel and colleagues presents a method of empirically measuring the prevalence and severity of poverty-linked food insecurity and hunger in the United States. Such a measure could be used to identify the neediest segments of the population in order to investigate the causes and consequences of hunger; to examine the relationships between hunger, malnutrition, and other health problems; and to monitor efforts to reduce poverty-linked hunger.

Building on existing research and advice from experts in the field, the authors developed a survey instrument that collects the data needed to measure food insecurity and hunger. The questionnaire elicits information on food shopping patterns, food expenditure levels, and participation in food assistance programs. It also allows analysts to define and measure broader concepts such as food sufficiency and methods of coping with food scarcity. This survey was administered as a supplement to the April 1995 Current Population Survey, so it yields a large, representative national sample. Data from this sample are being used to construct scaled measures of food insecurity and hunger, and to measure the prevalence and severity of food insecurity and hunger in the U.S. population.

RESEARCH AND POLICY

This monograph highlights two aspects of FCS' broad research agenda: to increase access to the FSP, and to measure nutrition and food security. The research on these topics offers lessons on how the FSP can come closer to its goal of improving the nutritional status of all low-income households. The papers that follow are intended to stimulate discussion and elicit new ideas about alternative approaches to achieving this and other objectives of the FSP.

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Rates Up: Trends in FSP Participation Rates, 1985–1992

Carole Trippe

INTRODUCTION

The Food Stamp Program (FSP) is the largest food assistance program in the country, serving over 27 million persons in a typical month and distributing $23 billion in benefits in fiscal year 1994. No other public assistance program reaches more poor individuals over the course of a year. Because the FSP does not limit eligibility to persons meeting certain categorical restrictions, such as the disabled, elderly, or families with children, food stamp benefits reach a much wider universe of persons than other programs, providing assistance to some who might otherwise "fall through the cracks" in the social welfare system.

Since food stamp benefits are available to any low-income persons who meet the eligibility criteria, policymakers want to know how well the program is reaching its intended population. The participation rate, which measures the proportion of those eligible for food stamps who actually apply for and receive them, provides this information. It can also indicate how well the program is reaching certain subgroups of the eligible population, such as children, the elderly, or the working poor.

"Almost 6 million new participants joined the [FSP] between January 1989 and January 1992, causing the participation rate to increase from 59 to 74 percent."

This paper presents the latest FSP participation rates and trends in rates since 1985 using Survey of Income and Program Participation (SIPP) data for eligibles and FSP administrative data for participants. The results show that overall participation rates have risen substantially since 1989 due to a surge in participants among the eligible population. Almost 6 million new participants joined the program between January 1989 and January 1992, compared with an increase of only 1.9 million eligibles, causing the participation rate to rise from 59 to 74 percent.

We first review the data and methods used for estimating FSP participation rates in 1985, 1988, 1989, and 1992.[1] We then present participation rates for January 1992 and set these estimates in the context of past participation rates, thus revealing trends in rates over time. We also present findings on which subgroups participated at higher or lower rates than others and look at their trends over time. Finally, we examine the characteristics of eligible nonparticipants.

DATA AND METHODS: ESTIMATING PARTICIPATION RATES

The participation rate is the number of participants divided by the number of eligibles. The number of participants is based on FSP administrative caseload data. The number of eligibles, however, is approximated using data from SIPP and a simulation designed to replicate the eligibility process.

Participants

We know how many persons and households participated in the FSP at a given time as well as what their benefits and characteristics were because food stamp offices collect and track this information. The total number of participants and total food stamp benefits is based on the FSP Statistical Summary of Operations data, or Program Operations data. The Program Operations database contains the total caseload and dollar value of benefits issued each month, but not information on the characteristics of FSP participants. The characteristics reported here are based on a sample of food stamp case records for each month from the FSP Integrated Quality Control System, or IQCS data.

Eligibles

We do not know explicitly how many persons and households were eligible for food stamps at a given time or what the potential benefits were because there is no record of eligible persons unless they actually apply for food stamps. Therefore, we use SIPP data and a microsimulation model to simulate FSP eligibility and potential benefits. To determine participation rates in January 1992, for example, we simulated eligibility for all households in the SIPP universe in that month based on Wave 7 of the 1990 Panel and Wave 4 of the 1991 Panel.

"The model applied FSP eligibility criteria . . . to each household on the [SIPP-based data file] to determine whether the household was eligible for food stamps."

A large part of estimating the number of eligibles involves preparing a SIPP file that contains all the information needed to closely replicate FSP eligibility criteria. A series of 30 programs was used to gather information from various SIPP data products. The core questionnaire of SIPP provides most of the information needed to model FSP eligibility, and the topical module questionnaire and the initial Wave 1 questionnaire provide the rest. The file preparation process begins by selecting all households that were present in January 1992 from Wave 7 of the 1990 Panel and Wave 4 of the 1992 Panel. From these waves, we extracted most of the data necessary for our simulation: household composition, earned and unearned income, asset income, and participation in the various government assistance programs. We then compiled the following remaining information from the topical module and initial Wave 1 questionnaire: disability status, financial asset balances, medical expenses, shelter and dependent care expenses, and nonfinancial assets (vehicle ownership).[2] Once the data file was created, the model applied the FSP eligibility criteria in effect in January 1992 to each household on the file to

determine whether the household was eligible for food stamps. For households that were eligible, the model determined the value of the food stamp benefits for which they qualified.

RESEARCH FINDINGS: JANUARY 1992 PARTICIPATION RATES AND TRENDS OVER TIME

In January 1992, food stamp benefits reached more individuals than ever before. The FSP provided benefits to 74 percent, or 24 million, of the 33 million persons eligible for benefits (Table 1). FSP participants received $1.6 billion, or 82 percent, of the total potential food stamp benefits, and they occupied 9.6 million households, or 69 percent of the total eligible households. In terms of the total U.S. population of 252 million, 13 of every 100 persons were eligible for food stamps, and 10 of every 100 persons received food stamp benefits in January 1992.

Participation Rates Rose Substantially Between January 1989 and January 1992

There was a 15 percentage point increase in the FSP participation rate for individuals between January 1989 and January 1992 (Figure 1).[3] This substantial increase—from 59 to 74 percent—occurred because of a surge in new participants (up 32 percent) along with only a modest increase in new eligibles (up 6 percent) (Table 2).

Almost 6 million new participants joined the program between January 1989 and January 1992. About 77 percent, or 4.6 million of the increase was due to a higher participation *rate* among eligibles (Figure 2).[4] Only 19 percent, or 1.1 million, of the increase was due to an increase in the *number* of eligibles. The remaining 4 percent increase was due to the interaction between the two factors: additional eligibles participating at a higher participation rate.[5]

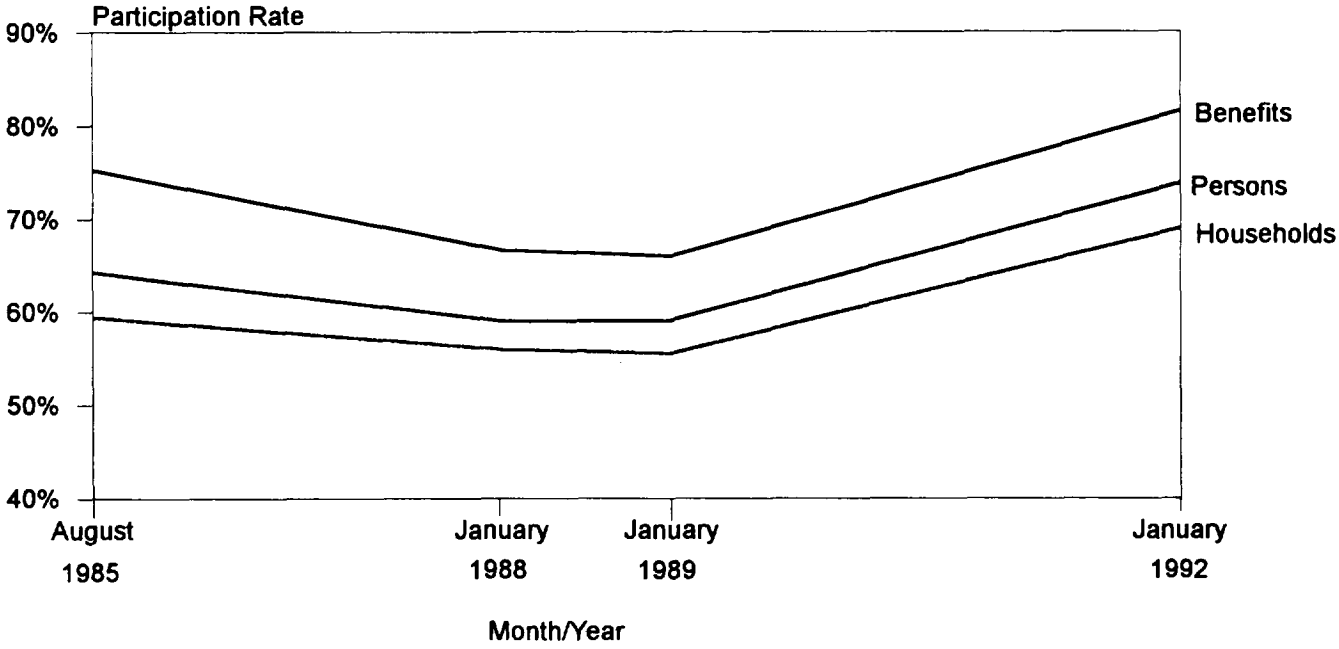
The surge in participants and thus participation rates after 1989 can be attributed to a worsening economy and other factors such as expansions in Medicaid, increased access to FSP offices, and outreach. Expansions in Medicaid began as early as 1988, and the effects of the recession were felt in many areas of the country before the recession was indicated by national measures.[6]

In January 1992, FSP participation rates reached their highest point since the beginning of the series in August 1985. Between August 1985 and

Table 1. January 1992 FSP Participation Rates

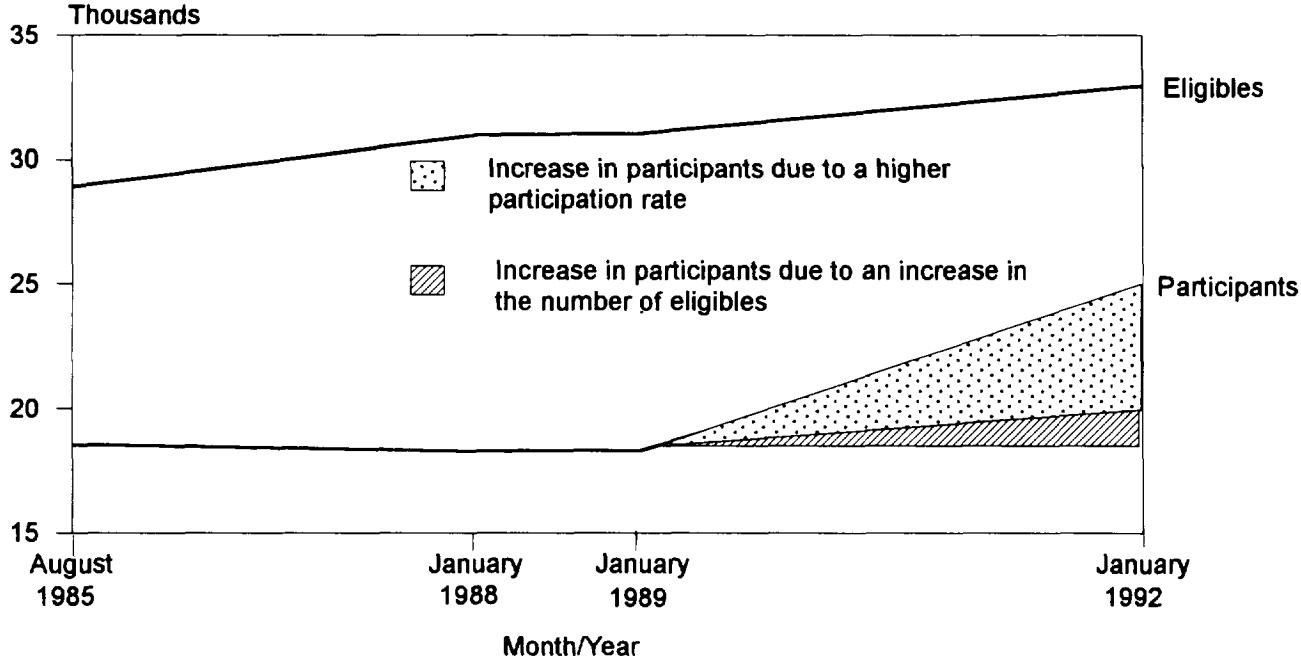
	Participants (thousands)	Eligibles (thousands)	Participation Rate (percent)
Persons	24,291	32,931	74
Households	9,631	13,983	69
Benefits	$1,615,320	$1,981,717	82

Figure 1. Trends in FSP Participation Rates, 1985-1992



Source: Food Stamp Program Operations data, SIPP data for the years shown.

Figure 2. Increase in Participants Due to a Higher Participation Rate, 1989-1992



Source: Food Stamp Program Operations data, SIPP data for the years shown.

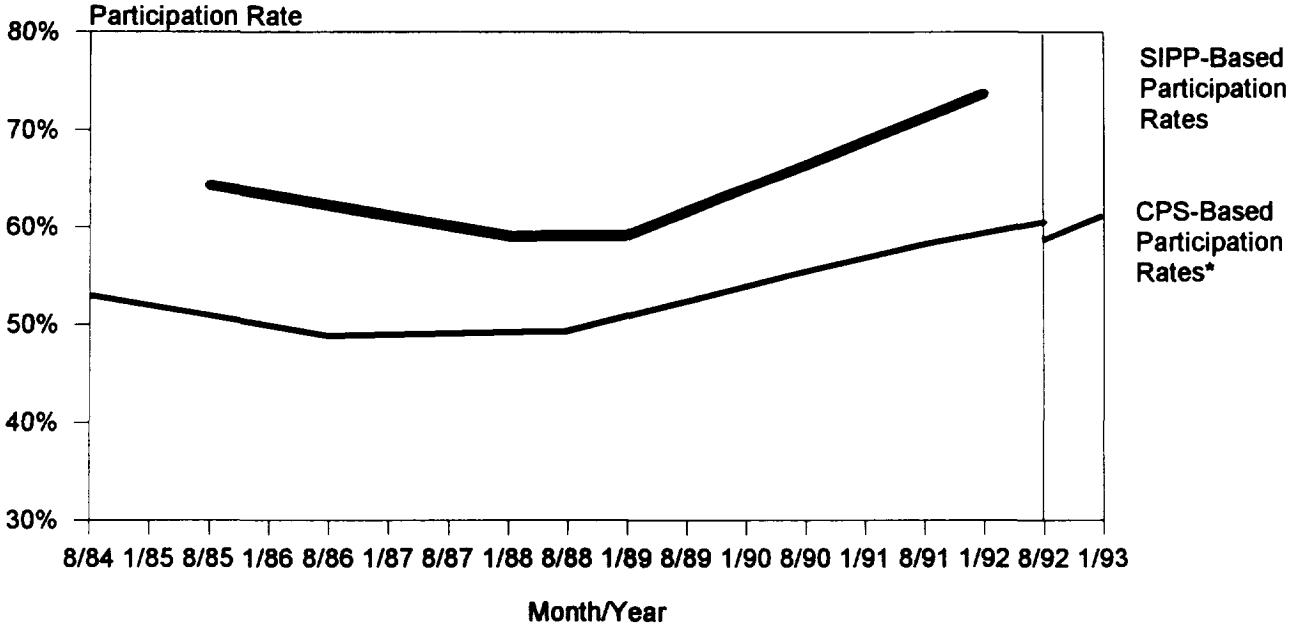
January 1988, the individual participation rate declined slightly, from 64 percent to 59 percent. It remained constant though 1989 before surging to 74 percent in January 1992. The decline in rates between 1985 and 1988 was largely a result of legislative changes authorized under the 1985 Food Security Act (FSA). Although the act expanded the number of persons eligible to receive food stamps, most of the newly eligible persons did not participate in the FSP.

Trends Are Consistent Across Different Data Sources

These trends, identified using SIPP data to estimate eligibles, are consistent with those identified in a study in which Current Population Survey (CPS) data were used to estimate eligibles, as shown in Figure 3. The SIPP-based estimates show a 5-point drop in the individual participation rate from 1985 to 1988, no change from 1988 to 1989, and a 15-point increase from 1989 to 1992. The CPS-based estimates show a similar drop (4 points) in the individual participation rate from 1984 to 1986, no change in the rate (less than 1 point) from 1986 to 1988, and a 12-point rise in the rate from 1988 to 1993.

Although these trends are based on different data sources, and each covers a slightly different period, they are remarkably similar. The rates based on SIPP data are more accurate than those based on CPS data because the

Figure 3. Comparison of SIPP-Based and CPS-Based Participation Rates, 1884-1993



Source: Food Stamp Program Operations data, March CPS data, SIPP data for the years shown.

* There is a break in the CPS-based time series in 1992 due to revisions to the weighting process introduced in the March 1993 CPS.

SIPP database contains more of the information needed to estimate food stamp eligibility, thus allowing us to more closely replicate the actual eligibility determination process. However, the SIPP data do not cover as long a period, and certain types of SIPP data needed to estimate eligibles are available for only a limited number of years. Nonetheless, the CPS-based study supports the slight drop in rates during the mid-1980s and the substantial increase in rates since 1989.

Rates for Subgroups

As summarized below, and as shown in Tables 3 and 4, some groups of eligibles tended to participate in January 1992 at a higher or lower rate than others:

- **Most Eligible Children Participated.** The FSP served almost every eligible child younger than 5 (95 percent) and most eligible children younger than 18 (86 percent).

- **One in Three Eligible Elderly Persons Participated.** One-third (33 percent) of eligible elderly persons participated in the FSP. Eligible elderly persons living alone were more likely to participate than those living with others.

Table 2. Comparison of FSP Participation Rates Over Time, 1985-1992

	August 1985	August 1988	January 1989	January 1992	Percent Change (1989 to 1992)
			THOUSANDS		
Eligibles					
Persons	28,884	30,973	31,041	32,931	6.1 %
Households	11,604	12,292	12,689	13,983	10.2 %
Benefits	$1,072,262	1,334,779	1,405,636	1,981,717	41.0 %
Participants					
Persons	18,560	18,286	18,344	24,291	32.4 %
Households	6,894	6,882	7,037	9,631	36.9 %
Benefits	$807,265	890,158	927,391	1,615,320	74.2 %
			PERCENT		DIFFERENCE (1989 to 1992)
Participation Rates					
Persons	64.3	59.0	59.1	73.8	14.7 points
Households	59.4	56.0	55.5	68.9	13.4 points
Benefits	75.3	66.7	66.0	81.5	15.5 points

Source: Estimates for eligibles are from the FOSTERS model, using data from SIPP. Numbers of participants are from the Food Stamp Program Operations data, adjusted for issuance errors.

- **African Americans Participated at Higher Rates Than Other Racial/Ethnic Groups.** Eligible households headed by African Americans were more likely to participate (92 percent) than households headed by Hispanics (61 percent) or white non-Hispanics (59 percent).[7]

- **The Lower the Income, the Higher the Participation Rate**. The FSP participation rate for households with a monthly income below the poverty line was 86 percent, compared with 21 percent for households with an income above the poverty line.[8] As income increased, households were less likely to participate.

Table 3. Participation Rates By Selected Demographic Characteristics, January 1992

Characteristics	Number of Participants (thousands)	Number of Eligibles (thousands)	Participation Rate (percent)
Individual			
Elderly age 60 or older	1,707	5,137	33.2
Living alone	1,129	3,113	36.3
Living with others	578	2,023	28.6
Disabled under age 60	951	1,419	67.0
Living alone	446	380	117.5
Living with others	504	1,039	48.5
Children under age 18	12,357	14,455	85.5
Preschool (under Age 5)	4,695	4,954	94.8
School-age (Age 5 to 17)	7,662	9,500	80.6
Adults ages 18 to 59	10,214	13,340	76.6
Living alone (not disabled)	1,527	1,358	112.4
Gender			
Male	10,014	13,475	74.3
Female	14,276	19,456	73.4
Total	24,291	32,931	73.8
Household			
White non-Hispanic head	4,570	7,803	58.6
African American head	3,334	3,612	92.3
Hispanic head	1,300	2,117	61.4
Total	**9,631**	**13,983**	**68.9**

Sources: January 1992 Food Stamp Program Operations data adjusted for issuance error. Special tabulations from IQCS data for January and February 1992.

January 1992 FOSTERS model, Wave 7 of the 1990 Panel and Wave 4 of the 1991 Panel of SIPP.

Note: Participation rates exceeding 100 percent are due to reporting and measurement errors in SIPP and in IQCS data. Although IQCS data is a survey of FSP participants, it has some, although fewer, reporting and measurement errors, particularly for characteristics not needed to determine eligibility.

- **The Higher the Benefit, the Higher the Participation Rate**. The participation rate was higher for households eligible for large benefits than for households eligible for small benefits. For example, the participation rate was 57 percent for those eligible for $150 in benefits or less, and 89 percent for those eligible for benefits of more than $150. The average benefit for eligible households was $142 in January 1992.

- **Households Receiving AFDC Benefits Were More Likely to Participate Than Those with Earnings or Unemployment Compensation**. The participation rate for households with AFDC exceeded 100 percent, the rate for households with earnings was 41

Table 4. FSP Participation Rates for Households by Income, Income Sources, and Benefit Amounts, January 1992

	Number of Participating Households (thousands)	Number of Eligible Households (thousands)	Household Participation Rate (percent)
Income as a Percentage of Poverty			
Total ≤ 100%	8,870	10,288	86.2
Total > 100%	761	3,695	20.6
Source of Income			
Earned income	1,910	3,959	48.2
SSI	1,755	2,393	73.4
Elderly in the unit	876	1,372	63.8
No elderly in the unit	879	1,020	86.2
Public assistance	4,574	3,783	120.9
AFDC	3,754	3,129	120.0
Other welfare	885	744	118.8
Unemployment compensation	267	648	41.2
Benefit Amount			
$10 or less	353	1,828	19.3
$11 - 75	1,606	2,973	54.0
$76 - 150	2,942	3,856	76.3
$151 or more	4,729	5,326	88.8
Total	**9,631**	**13,983**	**68.9**

Sources: January 1992 Food Stamp Program Operations data adjusted for issuance error. Special tabulations from IQCS data for January and February 1992.

January 1992 FOSTERS model, Wave 7 of the 1990 Panel and Wave 4 of the 1991 Panel of SIPP.

Note: Participation rates exceeding 100 percent are due to reporting and measurement errors in SIPP and in IQCS data. Although IQCS data is a survey of FSP participants, it has some reporting and measurement errors, particularly for characteristics not needed to determine eligibility.

percent, and the rate for households with unemployment compensation was 48 percent.[9]

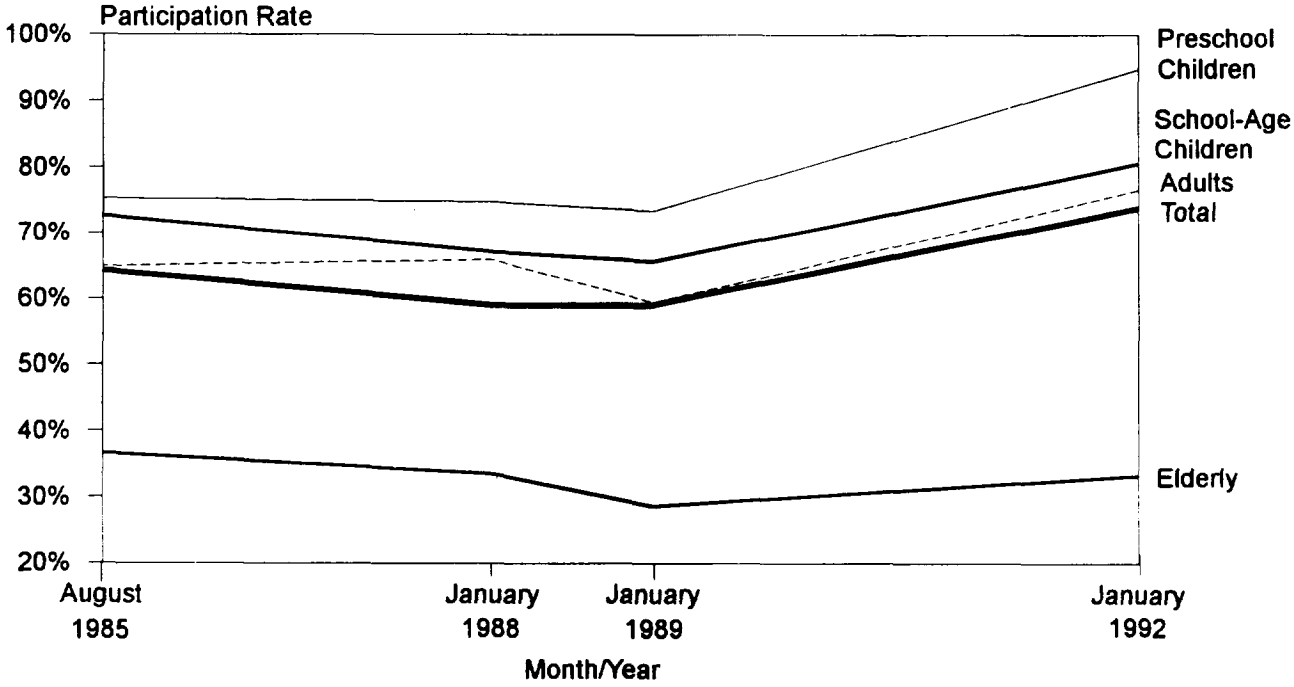
Trends in Rates for Subgroups Tend to Follow Overall Trends

Trends in participation rates for subgroups tend to follow trends for the general FSP population. Between 1989 and 1992, rates for most subgroups increased substantially—by about 15 points. However, rates for some groups increased more or less relative to other groups, as existing trends continued in most cases. Figures 4 through 7 illustrate the trends in rates over time and the patterns in rates by different characteristics of eligibles.

Rates for Children, Especially Preschoolers, Surged. Although participation rates for preschool-age children fell slightly from 1985 to 1989, they surged between 1989 and 1992 by 21 points. By comparison, participation rates for school-age children also fell slightly from 1985 to 1989 and rose between 1989 and 1982 by about the same as overall rates—15 points (Figure 4).

Rates for Elderly Persons Showed Little Change. Rates for elderly persons fell slightly between 1985 and 1989. This drop in rates is largely

Figure 4. Trends In Participation Rates By Age Groups, 1985-1992



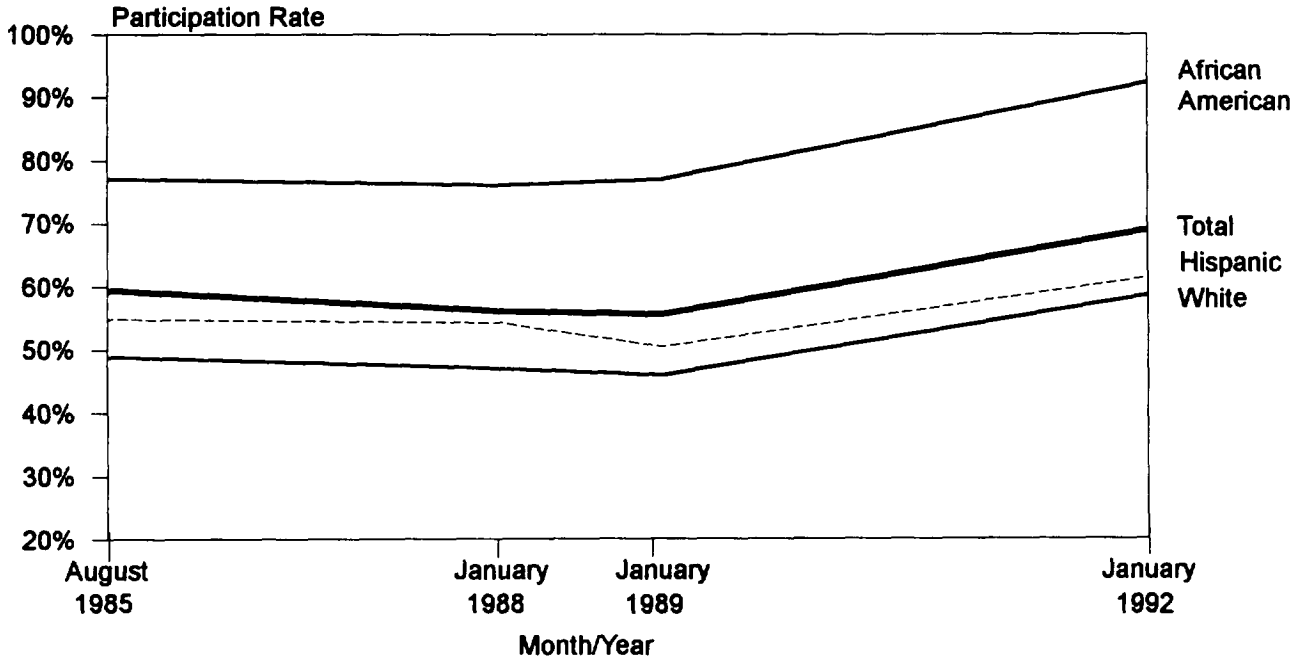
Source: Food Stamp Program Operations data, SIPP data for the years shown.

due to greater numbers of elderly made eligible under the 1985 FSA. These rates rose by only 5 points between 1989 and 1992 (Figure 4). During this period, rates for elderly persons rose less than rates for children, which may reflect the fact that the income of elderly persons tends to be relatively constant in real terms. Figure 4 also shows that participation rates for elderly persons are consistently lower than rates for children.

Rates for Adults Increased, and Rates for Single Adults Surged. Participation rates for adults (ages 18 to 59) increased substantially—by 17 points—and rates for single (nondisabled) adults soared—by 28 points—between 1989 and 1992 (Figure 4).[10] The latter increase may be partly a result of the large number of single persons applying for food stamps after other forms of assistance, such as General Assistance, were terminated or cut back.[11]

Rates for African Americans Continued to Outpace Rates for Other Groups. Participation rates for households headed by African Americans were consistently higher than rates for other racial/ethnic groups over the 1985 to 1992 period (Figure 5). Rates increased slightly more for African Americans than for other groups between 1989 and 1992—by 15 points

Figure 5. Participation Rates by Race/Ethnicity of Household Head, 1985-1992



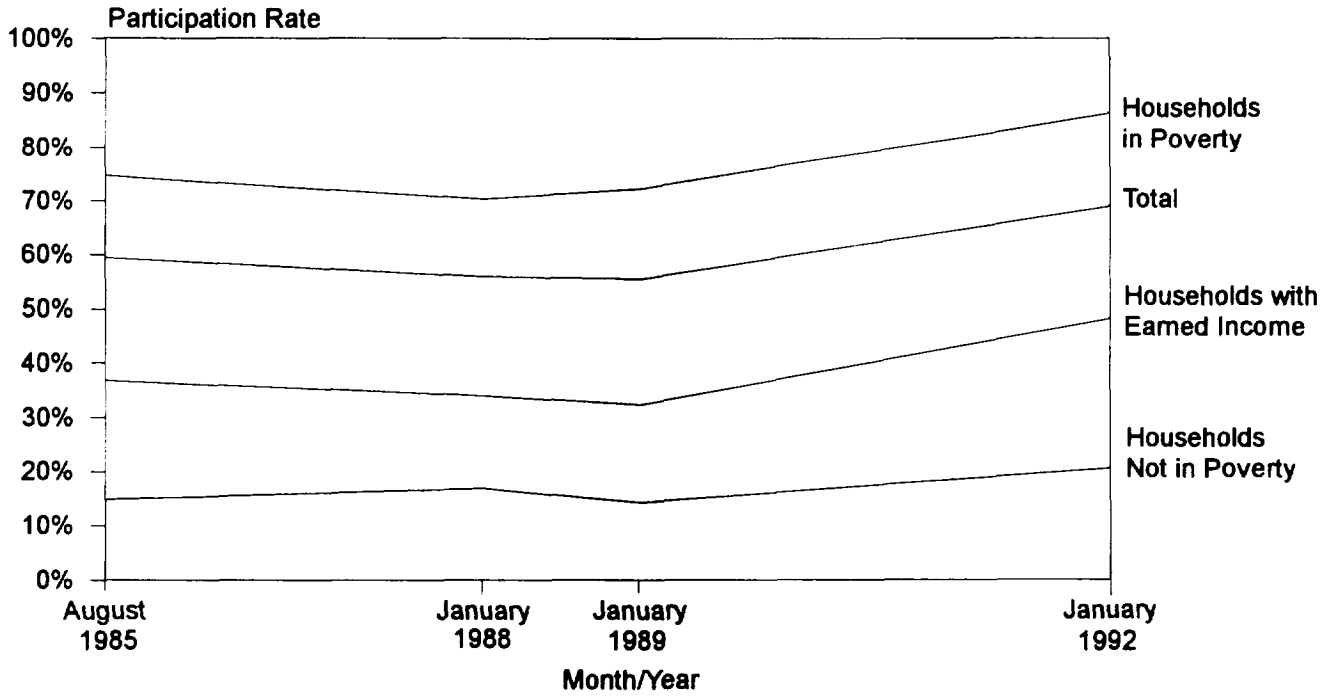
Source: Food Stamp Program Operations data, SIPP data for the years shown.

compared with 13 points for whites and 11 points for Hispanics. For Hispanic households, there was a larger-than-average increase in the number of participants and eligibles (46 and 20 percent, respectively) between 1989 and 1992, reflecting increases in immigration.

Rates Increased More for Those with Lower Incomes Than for Those with Higher Incomes. Participation rates increased much more for households with gross income below the poverty level (14 points) than for households with gross income above the poverty level (6 points) between 1989 and 1992 (Figure 6). As gross income rose, the rate grew less dramatically. Participation rates for households with zero gross income grew the most, by 23 points. Rates for households with gross income less than 50 percent of poverty grew by 16 points, and rates for households with income between 50 and 100 percent of poverty grew by 11 points.

Rates for the Working Poor Climbed. After dropping slightly between 1985 and 1989, the participation rate for households with earnings increased by 16 points between 1989 and 1992 (Figure 6). This rise may reflect the growing need for food assistance by the working poor as their real income falls.

Figure 6. Participation Rates by Selected Economic Characteristics, 1985-1992



Source: Food Stamp Program Operations data, SIPP data for the years shown.

Rates Increased More for Those Eligible for High Benefits Than for Low Benefits. Since those with the lowest income are eligible for the highest benefits, it is not surprising that the increase in rates for those with the lowest income is associated with an increase in rates for those eligible for the highest benefits. The participation rate for households eligible for the highest benefits (between 76 percent and 99 percent of the maximum benefit) increased by 25 points, while the rate for households eligible for the lowest benefits (between 1 percent and 25 percent of the maximum)

Characteristics of Eligible

Although 24 million persons participated in the FSP in January 1992, 8.6

stamp benefits (50 percent for those eligible for less than 25 percent of the maximum benefit)

- Households with earnings (47 percent)

SUMMARY AND CONCLUSIONS

The FSP participation rate—the ratio of the number of participants to eligibles—provides a good measure of the program's success in reaching its intended population. It can also indicate how well the program is reaching certain subgroups of the eligible population. Estimates based on recent SIPP data for eligibles and food stamp administrative data for participants indicate that the FSP is reaching more eligible persons than ever before. In January 1992, the program reached 74 percent of eligible individuals—up 15 points from January 1989.

The substantial rise in the participation rate since 1989 is due to a surge in new participants (up 32 percent) along with only a modest increase in new eligibles (up 6 percent). Almost 6 million new participants joined the program between January 1989 and January 1992. About 77 percent of this increase was due to a higher participation rate among eligibles, 19 percent was due to an increase in eligibles, and the remaining 4 percent was due to additional eligibles participating at a higher participation rate.

"Results based on 1993 CPS data indicated that participation rates are likely to continue to grow after 1992, but at a slower pace."

Participation rates for most subgroups increased by the same amount—15 points—as for the general FSP population between 1989 and 1992. However, rates for some subgroups increased more or less relative to other groups. For example, rates surged for preschool-age children—by 21 points—but showed little change for elderly persons—rose by 5 points. Rates for total adults increased by about the average—17 points—but rates for single adults surged—by 28 points. Rates continued to increase more for those with incomes below the poverty level—14 points—than for those with incomes above the poverty level—6 points. Since the dramatic jump in participation rates from 1989 to 1992, the number of participants has continued to rise, climbing from 24.3 million persons in January 1992 to 26.8 million persons in January 1993, and to 27.7 million in January 1994. The number of participants has fallen slightly since 1994, with 27.0 million participants in January 1995. As new SIPP data are released, allowing us to estimate the change in eligibles since 1992, we will be able to measure whether the participation rate has continued to rise, or if it leveled off after 1992. Results based on 1993 CPS data indicated that participation rates are likely to continue to grow after 1992, but at a slower pace.

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NOTES

1. The paper is based on a report on January 1992 participation rates (Trippe and Sykes 1994), which is the latest in a series that provides participation rates for 1985, 1988, and 1989. The years are selected on the basis of availability of SIPP Panel data needed to estimate eligibility, since necessary waves of SIPP data are only available in certain years.

2. More detailed information on the creation of the model database is in Sykes (1994).

3. The rate also rose for eligible households (up 13 points) and for potential benefits (up 16 points).

4. If there had been no increase in the size of the eligible population between 1989 and 1992, but participation rates had been as observed in 1992, the increase in the number of participants would have been 4.6 million persons, or 77 percent of the observed 6 million increase—just from an increase in the participation rate. However, if the participation rate had remained constant between 1989 and 1992, the increase in participants would have been only 1.1 million, or 19 percent of the observed 6 million increase—just from the increase in the number of eligibles. The remaining 4 percent increase is likely due to interactive effects of additional eligibles participating at a higher rate.

5. Figure 2 sums the 19 and 4 percent increases into a 23 percent increase due to additional eligibles (participating at the 1989 rate and higher rates).

6. See also McConnell (1991). The recession officially began in July 1990 and ended in March 1991, according to the National Bureau of Economic Research.

7. Multivariate analyses of the relationship between race/ethnicity and participation rates revealed that when other household characteristics are held constant, there is a much smaller gap between participation rates of households headed by African Americans and whites

(Martini 1992). This suggests that most of the difference between participation rates of African Americans and whites is not a result of race per se, but of factors correlated with race.

8. Households in poverty are defined as households with gross income less than the federal poverty guideline by household size.

9. When adjusted for known levels of underreporting of AFDC program participation in SIPP, the participation rate for households with AFDC was 88 percent. This more realistic rate for households with AFDC is still much higher than for other groups of eligibles. Multivariate analyses of program participation have shown that FSP-eligible households with public assistance are much more likely to apply for food stamps than other households, regardless of their income, household size, or other characteristics.

10. Participation rates for single nondisabled adults are not shown in the figure.

11. See Danziger et al. (1994) for a discussion of the extent to which former General Assistance participants in Michigan have used other public assistance since General Assistance was terminated.

12. Participation rates for households eligible for the maximum benefit (households with zero net income) increased by 14 points, but these households seem to behave differently from other households. A study of zero-income households is currently being conducted by Mathematica Policy Research.

Table of Contents

Evaluation of Expedited Service in the Food Stamp Program[1]

Susan Bartlett

INTRODUCTION

Expedited service is the administrative mechanism through which the Food Stamp Program (FSP) provides immediate assistance to households that do not have enough resources to purchase food in the month they apply for benefits. Applicants processed under expedited service procedures are entitled to receive food stamps within five calendar days of filing their application, instead of within the standard processing time of 30 days. Under current law, four categories of households qualify to receive expedited service:

- Households that have less than $150 in gross monthly income and $100 or less in liquid resources
- Households composed of destitute migrant and seasonal farm workers with liquid resources of $100 or less
- Households in which all members are homeless
- Households judged at risk of becoming homeless because their combined gross monthly income and liquid resources are less than their monthly housing and utility costs.

Expedited service procedures were first implemented in 1979, and in 1987, the Food and Consumer Service (FCS) published a comprehensive study of expedited service that used data from 1981 through 1984.[2] Washington, DC: U.S. Department of Agriculture, Food and Nutrition Service; and SRA Technologies, Inc., April 1987. We refer to this as the "1987 Study" throughout this paper. Since that time, important legislative, economic, and legal developments have prompted FCS to sponsor the evaluation of expedited service provisions, which is the subject of this paper. First, the Stewart B. McKinney Homeless Assistance Act of 1987 (McKinney Act) expanded expedited service entitlement to homeless households and to households judged in danger of becoming homeless because they lacked the resources to cover their shelter expenses. States have raised concerns that the proportion of approved applicants entitled to expedited service increased markedly because of the McKinney Act, creating a substantial burden on local offices. In addition, some have

expressed concern that expedited service is no longer targeted to households with the most urgent need for emergency assistance. Many also believe that it is more difficult to process the groups added by the McKinney Act than others who qualify for expedited service.

Second, the economic downturn of the late 1980s led to a 34 percent increase in the food stamp caseload between 1988 and 1992, as well as state budgetary cutbacks, both of which affected the local administration of the FSP. Many states have argued that expedited service policy adds a difficult administrative burden to an already over-stretched system.

Finally, because states have been faced with legal challenges for failing to meet expedited and general food stamp delivery standards, FCS is interested in examining the factors that affect the timeliness of benefit delivery.

"The overall objective of this study is to provide information that FCS can use to assess current expedited service operations."

In light of these events and issues, the overall objective of this study is to provide information that FCS can use to assess current expedited service operations at the national level. This project updates previous findings and examines the impact of recent legislative and regulatory changes designed to improve expedited service. The study also responds to states' concerns with expedited service and presents the perspectives of state officials, local food stamp officials, and the advocacy community on the problems they are having with the implementation of expedited service and suggestions for ways to improve operations. Specifically, the study:

- Provides information on the number and characteristics of expedited service households and the nature of expedited service operations
- Examines the impact of the McKinney Act on expedited service households and operations
- Evaluates the extent to which expedited service operations achieve the intent of federal laws and regulations
- Examines the impact of expedited service on overall FSP administration
- Identifies ways in which expedited service policy operations may be improved

The approach to these tasks, including study design, sampling, and data collection activities, is explained in the next section. This is followed by a

discussion of the research findings, which presents the number and proportion of food stamp applicants that receive expedited processing and examines the impact of the McKinney Act on the expedited service caseload. We also analyze the demographic and economic characteristics of regularly processed and expedited service cases, and we explore two key aspects of the implementation of expedited service policy—timeliness of benefit delivery and accuracy of screening—to assess how well current operations achieve the intent of the provisions. Also examined is the extent of payment error associated with expedited service. The paper concludes with a summary of findings and attempts to draw implications for further public policy discussions.

RESEARCH APPROACH: DATA AND METHODS

The study is designed to provide precise and valid national estimates of the size and characteristics of the expedited service population and selected subgroups, and to compare key characteristics and processing outcomes for approved expedited service and regularly processed applicants.[3] In order to meet these goals we developed a two-stage national probability sample of expedited and regularly processed households.

In the first sampling stage, we selected 59 local food stamp offices to participate in the study by stratifying all local offices in the 48 contiguous states and the District of Columbia along two dimensions.[4] First, offices were grouped into three categories of caseload size—small, medium, and large- defined so that one-third of all local offices fell within each category.[5] The second stratifier also divided offices into three groups: metropolitan offices with a high concentration of homeless applicants, other metropolitan offices, and nonmetropolitan offices.[6] Within each stratum, offices were selected using systematic probability proportional to size (PPS) sampling, with monthly caseload as the measure of size. Because of this methodology, larger offices within a stratum had a greater probability than smaller offices of being included in the sample.

In the second sampling stage, two nationally representative samples of approved food stamp applicants were drawn from the 59 local offices selected for the study. The first sample included households that applied for food stamps between October 1, 1991 and September 30, 1992 and were approved to receive benefits. The states (and in some cases, the counties) participating in the study supplied these data. The second sample included those that applied during August and September 1993. The time frame for this sample was restricted because we used a self-administered survey of food stamp applicants (described in more detail below) to provide the sampling frame.

Approved applicants were stratified into three categories—homeless, expedited but not homeless, and regularly processed. Within each local office, we then drew a systematic random sample from each category. The final analysis sample included 4,497 approved households that applied during fiscal year (FY) 1992, and 3,695 approved households that applied during the 1993 period. Although the applicant samples were designed to reduce variation in the probability of selection, the samples were not fully self-weighting. All applicant data were therefore weighted to account for their selection probabilities.

Data for those in the final analysis sample were abstracted from case file records of food stamp applicants. These data provided information on whether applicants received expedited service, the characteristics of expedited and regularly processed food stamp applicants, and details of the application process necessary to assess expedited service operations.

All persons applying for food stamps in the small and medium-sized offices during August and September 1993, and a sample of persons in the large offices were asked to complete a self-administered applicant survey, which was attached to the application form. The eligibility workers reviewed the survey during the certification interview and entered information on whether the household was approved for food stamps and whether it received expedited service. Using this information, we selected the 1993 sample of approved applicants for the case file record abstractions. The survey also provided information about applicants' circumstances immediately prior to applying for food stamp benefits, which helped us to better measure households' need for emergency food assistance. Finally, we surveyed state and local food stamp directors, workers involved in the application process, and food stamp advocacy groups in the selected local officers to obtain information on state and local policies and procedures concerning expedited service. We were also interested in their perspective on the issues and problems associated with current expedited service policy and changes that would improve the policy.

RESEARCH FINDINGS

Prevalence of Expedited Service Among Approved Applications

In the 12 months from October 1991 to September 1992, 7.1 million households were approved to receive food stamp benefits nationwide (Table 1). Thirty-five percent of them received expedited service. In August–September 1993, the proportion receiving expedited service was 43 percent. Although the difference between these two estimates appears to suggest that the proportion of expedited service cases rose between 1992 and 1993, further analysis suggests that no important increase occurred. The expedited service rate in August–September 1992 was also

relatively high at 38 percent. The difference of five percentage points in the two August–September periods is not statistically significant. Therefore, expedited service rates do not appear to have changed greatly between 1992 and 1993.

The proportion of applicant households that receives expedited services in larger offices is somewhat higher than in smaller offices. Similarly, metropolitan offices have somewhat higher expedited service rates than non-metropolitan offices. Most of the observed differences, however, are not statistically significant.

The previous national study of expedited service in the FSP found that the proportion of applicants receiving expedited service during the February 1983-May 1984 period was 34 percent. This does not differ significantly from the current study's estimated expedited service rate for FY 1992.

Although the data suggest that the percentage of food stamp applicants receiving expedited service has not increased in the past decade, the actual number of applicants processed under expedited procedures has increased quite substantially. During FY 1992, approximately 2.5 million households received expedited service. During the early 1980s, somewhat over 2 million households received expedited processing annually. Thus, the number of actual applications that were processed under expedited service increased by 22 percent during the past decade. This observed increase is mainly a result of the dramatic growth in the overall food stamp caseload

Table 1. Expedited Service Status of Approved Food Stamp Applicant Households

	2/83-5/84	10/91-9/92	8/93-9/93
Total number of approved food stamp households	7,960,000	7,132,380	794,904
Number receiving expedited service	2,710,000	2,485,603	338,744
(standard error)	(349,000)	(289,184)	(30,780)
Percent receiving expedited service	34.0 %	34.9 %	42.6 %
(standard error)	(2.5)	(2.9)	(3.0)
Number regularly processed	5,250,000	4,646,777	456,159
(standard error)	(501,000)	(658,916)	(47,825)
Percent regularly processed	66.0 %	65.2 %	57.4 %
(standard error)	(2.5)	(2.9)	(3.0)
Unweighted N	2434	4497	3695

Source: 1987 study; unweighted N refers to sample size for detailed case file abstraction.

and does not reflect significant increases in the proportion of applicants receiving expedited service.

Expedited Service Entitlement Criteria

Households may qualify for expedited service under any of four criteria. Table 2 shows the distribution of expedited cases by entitlement criteria for 1991–1993.[7] The first column shows a duplicated distribution in which some households appear in more than one category. The total thus sums to more than 100 percent. The second column is unduplicated. Each case appears in only one category—the first identified category in the order listed. The total of this column sums to 100 percent.

Fully 90 percent of all expedited service cases qualify because their income and resources are below the established limits. Destitute migrants and seasonal farmworkers make up only 2 of the expedited service caseload. However, most also qualify for expedited service on the basis of income/ resources.

Of special interest are the households qualifying for expedited service because of the McKinney Act. Overall, a substantial number of expedited service cases are homeless (24 percent) or appear to be at risk of becoming homeless (56 percent). Most of these households, however, also have income and resources below the established guidelines and so would have qualified for expedited service before the McKinney Act. Only 10 percent of households qualifying for expedited service can be regarded as "McKinney" cases, meaning that they qualify for expedited service only because of the McKinney Act provisions. Most of these cases are not homeless (2.5 percent) but are considered to be in danger of becoming homeless (7.1 percent) because their shelter costs exceed their income and liquid resources. We conclude that the McKinney Act added a substantial, though not overwhelming, number of cases to the expedited service

Table 2. Approved Applicants Receiving Expedited Service, by Entitlement Criteria

	Percentage Distribution of Approved Applicants Receiving Expedited Service	
Entitlement Criteria	Duplicated	Unduplicated
Monthly income/resources below limits	90.3 %	90.3 %
Destitute migrant/seasonal worker	1.7	0.1
McKinney criteria		
Homeless	24.3	2.5
Shelter expenses exceed income/resources	55.8	7.1
Total	>100.0 %	100.0 %
Unweighted N	5234	5234

caseload. In fact, the McKinney Act appears to be responsible for the stability in the expedited service rate observed over the past decade. In the absence of the McKinney Act, the FY 1992 rate would have been lower than observed in the early 1980s.

Characteristics of the Expedited Service Caseload

Expedited service cases are expected to have characteristics that differ from those of regularly processed cases, reflecting their differential needs for program assistance. This section explores these differences. It also examines how the characteristics of expedited households differ from one another depending on the criteria under which they qualify for expedited service. In particular, we are interested in whether McKinney cases differ from other expedited cases in ways that suggest they are more or less needy than other cases.

Demographic Characteristics. The typical expedited service household is strikingly different from the typical regularly processed case, as shown in Table 3. A majority of expedited service applicants (56 percent) are one-person households, whereas most regularly processed households include two or more people. Expedited service households do not typically include children. Only 38 percent of expedited service households include children, compared with 61 percent of regularly processed cases.

Given this basic difference in household types, several differences in the demographic characteristics of the heads of household are not surprising. Compared with the heads of regularly processed households, these in expedited service households are:

- More likely to be men
- More likely never to have married
- Less likely to be elderly

"Expedited service households do not typically include children, . . . and expedited service applicants are less likely than regularly processed applicants to be employed."

Expedited applicants are also far less likely than regularly processed applicants to be employed when they apply for benefits. This difference is to be expected, given that the basic objective of expedited service is to serve applicants with the most pressing needs. Around 60 percent of both types of applicants, however, are fairly recently attached to the labor force, as indicated by the percentage who report having worked at some time within the past year.

The patterns of differences between expedited service and regular cases observed in this study and in the 1987 study are very similar. Although

Table 3. Demographic Characteristics of Approved Food Stamp Applicants, by Expedited Service Status and Entitlement Criteria

Characteristic	Regularly Processed Applicants (%)	Expedited Service Applicants (%)	Expedited Service Criteria[a]		
			Monthly Income/ Resources Below Limits (%)	Homeless (%)	Shelter Expenses Exceed Income/ Resources (%)
Household composition characteristic					
One-person households	32.7	56.2 †††	58.4	68.9	29.3 ***
Households with children	60.7	38.0 †††	35.8	29.1	62.9 ***
Female-headed with children	32.9	24.4 †††	22.8	18.9	42.0 ***
Characteristics of household head					
Age (mean years)	36	33 †††	33	31	35 **
Female	73.5	55.0 †††	53.3	39.3 ***	76.3 ***
Non-white	44.7	44.2	43.8	46.6	47.3
Never married	29.7	43.3 ††	45.2	44.4	22.9 **
Currently employed	24.7	7.5 †††	6.2	22.7 **	16.6 ***
Employed within past year[b]	63.2	56.7 †	55.7	56.6	66.8
Disabled	15.8	8.3 †††	7.8	16.9 **	12.3 *
Received food stamps previously	47.5	44.9	44.1	55.8	51.5 *
Received expedited service previously	9.8	21.8 †††	22.4	21.2	14.4 *
Unweighted N	2885	5307	4718	147	360

[a]Unduplicated criteria. Excludes cases with missing data on criteria (n = 73). Destitute migrants and seasonal farmworkers not shown separately, as sample size (n = 9) was too small to produce valid estimates.
[b]Data from self-administered applicant survey, and thus only available for 1993 sample (n = 3,426).

* Significantly different from monthly income/resources below limits category at 0.10 level.
** Significantly different from monthly income/resources below limits category at 0.05 level.
*** Significantly different from monthly income/resources below limits category at 0.01 level.

† Significantly different from regularly processed at 0.10 level.
†† Significantly different from regularly processed at 0.05 level.
††† Significantly different from regularly processed at 0.01 level.

the demographic characteristics of food stamp cases as a whole have changed over time, the demographic characteristics of expedited cases relative to regular cases have changed little. For example, among all recipients, the proportion of female-headed households has increased, reflecting a nationwide trend, but in both studies the proportion of female-headed households is significantly lower among expedited cases than among regular cases.

Differences in Income, Resources, and Expenses. Because expedited service is intended for applicants with the most urgent need for assistance, one would expect expedited service households to have lower income and asset levels than households receiving regular processing. The data bear out this expectation (Table 4).

"Expedited service households have lower income and asset levels than households receiving regular processing."

Applicants receiving expedited service have an average monthly gross income of $154, or a little over one-quarter of the average recorded for regularly processed cases. Regular applicants are clearly poor, with incomes averaging 59 percent of the federal poverty level, but expedited service applicants are in even more difficult circumstances, as their incomes average just 19 percent of the poverty level.

The lower earnings of these households account for 60 percent of the difference in average gross income. Expedited service cases also have lower amounts of unearned income from almost every source, including Social Security, AFDC, SSI, and unemployment compensation. General Assistance is the only source providing similar amounts of income to expedited service and regularly processed applicants. These patterns of income reflect differences in the demographic composition of cases described earlier.

Neither expedited service nor regularly processed cases have substantial assets; assets for these cases average $60 and $170, respectively. Both groups have liquid resources that, on average, are below the $100 limit for expedited service. Even if nonliquid resources were included, most expedited service cases would still fall below the $100 limit.

The average shelter expenses of expedited service cases are 72 percent of the average for regular cases, despite the fact that they have only about a quarter as much income as regular cases. This pattern reflects the presence of two quite different kinds of households in the expedited service caseload: homeless households with little or no housing expense and households with shelter costs that exceed their combined income and assets.

Table 4. Income, Resources, and Expenses of Approved Food Stamp Applicants, by Expedited Service Status and Entitlement Criteria

			Expedited Service Criteria[a]		
	Regularly Processed Applicants	Expedited Service Applicants	Monthly Income/ Resources Below Limits	Homeless	Shelter Expenses Exceed Income/Resources
Monthly gross income					
Mean amount[b]	$532	$154 †††	$125	$225	$394 ***
Percent with zero income	14.3	53.9 †††	58.4	46.0	8.6 ***
Income relative to poverty line	0.59	0.19 †††	0.16	0.30 *	0.47 ***
Earnings					
Mean amount[b]	$272	$47 †††	$33	$114 **	$139 ***
Percent receiving	37.9	13.0 †††	10.1	29.3 **	36.0 ***
Unearned income					
Mean amount[b]	$259	$107 †††	$92	$111	$255 ***
Percent receiving	57.6	35.2 †††	33.2	27.9	60.4 ***
Total assets					
Mean amount[b]	$170	$60 †††	$57	$76	$77
Percent reporting zero assets	64.6	80.9 †††	82.2	75.2	68.7 **
Liquid resources					
Mean amount[b]	$96	$22 †††	$19	$42	$44 **
Percent holding	32.1	17.0 †††	15.8	20.3	29.2 **
Shelter expenses					
Mean amount[b]	$354	$256 †††	$238	$69 ***	$543 ***
Percent reporting no shelter expense	11.2	34.7 †††	36.7	65.3 ***	0.6 ***
Unweighted N	2,885	5,307	4,718	147	360

[a]Unduplicated criteria. Excludes cases with missing data on criteria (n = 73). Destitute migrants and seasonal farmworkers not shown separately, as sample size (n = 9) was too small to produce valid estimates.
[b]Averaged across all cases; includes those reporting no incomes/assets/expenses.

* Significantly different from monthly income/resources below limits category at 0.10 level.
** Significantly different from monthly income/resources below limits category at 0.05 level.
*** Significantly different from monthly income/resources below limits category at 0.01 level.

† Significantly different from regularly processed at 0.10 level.
†† Significantly different from regularly processed at 0.05 level.
††† Significantly different from regularly processed at 0.01 level.

Differences in Characteristics by Expedited Service Criteria. Many officials and policymakers have expressed concern that the groups added by the McKinney Act do not urgently need emergency assistance. This analysis shows that although the 10 percent of applicants who were granted expedited service by the McKinney Act have higher average incomes than other expedited service cases, they do have a greater need for this service than the households that receive regular processing (see Tables 3 and 4).

Households qualifying for expedited service on the basis of income and resources account for 90 percent of all expedited service cases, so their profile closely resembles that of the entire expedited service caseload. Their income and resources are extremely limited—average monthly income is $125, and liquid resources average $19.[8] Their shelter expenses average $238, which is almost $100 more than their combined monthly income and liquid resources.

Households qualifying for expedited service solely on the basis of homelessness live in somewhat less severe circumstances than do households that fall below the income and resource thresholds. This is because the homeless category includes only those homeless households that were not recorded as qualifying for expedited service under the income and resource criteria.[9] Compared to the income/ resource group, the homeless:

- Have roughly twice as much total monthly income ($225 versus $125)
- Are much more likely to have earnings (29 percent versus 10 percent)
- Are more likely to have unearned income from Social Security and SSI, and are less likely to receive AFDC and General Assistance.

Although the homeless group has a higher income than the income/ resource group, their income is less than half the average for regularly processed cases.

The demographic profiles of homeless applicants and those who meet the income/ resource criteria are quite similar. Both groups have a large proportion of one-person households (roughly 60 percent, compared with 33 percent of regularly processed cases). Both groups include a high proportion of male applicants and relatively few female-headed households with children.

Not surprisingly, households qualifying for expedited service only because their shelter expenses exceed their income and resources are distinguished by exceptionally high shelter expenses—$543 per month, on average. This far exceeds the average monthly expenditures of other expedited service households and those of regularly processed applicants, who report monthly shelter expenses averaging $354.

Data suggest that recent job loss may have triggered the food stamp application for a substantial number of households with shelter expenses that exceed their income and resources. Although 36 percent reported some earnings in the past month, only 17 percent of the households were employed when they applied. A quite comparable 38 percent of regularly processed applicants reported earnings, but 25 percent of the household heads continued to be employed when they applied for benefits.

With respect to unearned income, households qualifying for expedited service only because their shelter expenses exceed their income and resources look more like regularly processed households than other expedited service households. Approximately 60 percent of the households report receiving some unearned income, and the monthly average of $255 is virtually identical to the average for regularly processed cases.

The resources of households with shelter expenses that exceed their income and resources are quite limited. On average, they report total assets of $77, fairly similar to the average for other expedited service households and less than the $170 average reported by regularly processed households.

The demographic profile of the households with shelter expenses that exceed their income and resources is quite similar to the profile of regularly processed cases, and thus very different from other expedited service cases. Most are multi-person households, three-quarters are female-headed, and more than one-third are female-headed households with children.

Application Processing

Timeliness of benefit delivery and the accurate designation of cases for expedited service are two aspects of FSP application processing that can be used to measure how well current expedited service operations achieve the intent of federal laws and regulations.

Timeliness of Benefit Delivery. A central indicator of the effectiveness of expedited service policy is the percentage of expedited service cases that receive their initial food stamp benefits within the 5 days mandated by

federal law. The data show that 76 percent of expedited service cases were authorized for benefits within 5 days, and 85 percent were authorized within 10 days. The average time between application and authorization was 5.7 days.

"Local offices are doing a substantially better job of delivering expedited service benefits within the mandated time period than in the early 1980s."

These data indicate that local offices are doing a substantially better job of delivering expedited service benefits within the mandated period than in the early 1980s, when data for the 1987 study were collected. That study found that approximately 60 percent of all expedited service cases received their benefits within 5 days. The average processing time was 7 days at that time.

A substantial number of regularly processed applicants also receive their benefits fairly quickly. More than one third were authorized within 5 days of application, and roughly half, within 10 days. On average, regularly processed cases were authorized for benefits 14.8 days after they filed their applications.

The percentage of expedited applications processed within 5 days varies substantially by office. Some offices processed all of their expedited applications within five days, whereas others processed only 30 to 40 percent within this period. In order to understand why some offices are more successful than others in processing expedited applications quickly, we examined how office-level characteristics are related to the timeliness of benefit delivery.

Two aspects of office and workflow organization appear to positively affect an office's ability to process expedited cases within five days. Some offices conduct the certification interview for expedited cases on the same day that the applicant first appears at the office. These offices authorize benefits for 87 percent of their expedited cases within five days. Beginning the certification process quickly seems advantageous for these offices.

Offices that screen applicants to determine their eligibility for expedited service before scheduling the certification interview are also more likely than other offices to meet the five-day standard for expedited cases. These offices identify expedited cases quickly and place them on a "fast track" for processing.

The data also suggest that smaller expedited service caseloads may help offices meet the five-day deadline. Offices with the highest proportions of expedited service cases (exceeding half of all applicants) approve 73 percent of applications from eligible households within five days,

compared with roughly 78 percent in offices with lower proportions, though the observed difference is not statistically significant. Also, supporting the theory that an office's expedited service rate affects timeliness, small and medium-sized offices and offices in nonmetropolitan areas, which tend to have below-average proportions of expedited service cases, process relatively more of their expedited cases within five days than other types of offices.

"Postponed verification, which allows workers to suspend normal requirements for verifying eligibility, appears to increase the timeliness of benefit delivery."

In addition to these office-level characteristics, postponed verification appears to increase the timeliness of benefit delivery because it allows workers to suspend normal requirements for verifying items of eligibility in order to meet the processing standard for expedited cases. Although offices postpone verification to different degrees, postponed verification cases are somewhat more likely to receive benefits in five days than the cases for which verification is not postponed (81 percent versus 71 percent), though the difference is not statistically significant.

Accuracy of the Expedited Service Designations. The effectiveness of expedited service policy depends on the accuracy of the expedited service designation as well as timeliness of benefit delivery. The case file records of food stamp applicants contain information on whether or not they were identified as being qualified to receive expedited service. Using other information from the case file record, including income, resources, and housing expenses, we independently determined the expedited service status of all applicants and compared this to the status designated by the food stamp worker.

The expedited service status of 82 percent of all applicants was correctly determined.[10] Only 6 percent of clients who received expedited service were not actually qualified to receive it. On the other hand, 12 percent of all applicants who appeared to be qualified for expedited service were shown in the case record to have been processed regularly. Results from the 1987 study are similar. That study found that 4.5 percent of all applicants received expedited service even though they did not meet the entitlement criteria, and 15.7 percent qualified for expedited service but received regular processing.

The data suggest that the criterion granting expedited service to households whose shelter expenses exceed their income and resources may be misunderstood in some systematic fashion. Of those cases that qualified for expedited service solely because of excessive shelter expenses, 42 percent did not actually receive expedited service. In contrast, only 15 percent of all other cases that qualified for expedited service did not

receive the appropriate designation. Either food stamp workers are substantially less likely to understand the criterion related to high shelter costs, or they are more likely to ignore the criterion in the belief that these cases do not urgently need assistance. Apart from this issue, the data suggest that random human error accounts for much of the remaining misdesignation.

Payment Error Associated with Expedited Service

Since expedited service policy was first implemented in 1979, officials and policymakers at all levels of government have been concerned about the effect of the provisions on program integrity, particularly on the potential for error and fraud. The 1987 study found that expedited service policy did not lead to more payment errors. Concerns about program integrity surfaced again, however, with the passage of the McKinney Act, as many argued that the groups added by the act are particularly difficult to process.

The most accurate way to estimate issuance errors associated with expedited service would be to measure the errors directly. This approach would be quite costly, however, and would require extensive federal-state planning, as it would involve special quality control reviews of a nationally representative sample of expedited service cases.[11] The approach in this study has been to examine measures that serve as indicators of potential error. Specifically we examined patterns of benefit change in the early months after initial issuance. If expedited cases are more likely than regular cases to experience early terminations or decreases in their benefits, this would suggest that issuance errors are more likely to occur in association with expedited service cases than with other cases.

"Expedited service cases in general are much more likely than regular cases to close within three months of initial certification."

Expedited service cases in general are much more likely than regular cases to close within three months of initial certification. As shown in Table 5, the overall or unadjusted three-month termination rate is 8.1 percent for regular cases and 16.0 percent for expedited service cases. At 21.3 percent, the rate for expedited service cases with postponed verification is still higher. The patterns are similar for combined rates of termination and benefit decrease. Rates are higher for expedited cases compared with regular cases, and postponed-verification cases have the highest rates of all.

We cannot conclude from this evidence alone that the higher rates for expedited cases are due to errors in initial allotments. Benefit reductions and terminations can also reflect changes in household circumstances or failure to follow procedures (e.g., for not providing all verification). Some types of households are more likely than others to experience these

changes, and we thus expect that some of the observed difference in the rates is due to differences in the caseload composition of expedited *versus* regular cases. To control for these differences, we estimated multivariate models of the likelihood of early termination or benefit reduction that control for case characteristics.[12] The models were used to estimate the adjusted termination and benefit reduction rates shown in Table 5.

The differences in the adjusted rates between expedited service and regular cases are substantially smaller than the differences in the unadjusted rates. Nevertheless, even after office and case characteristics are controlled for, the benefits of expedited service cases are still significantly more likely to be terminated early or reduced, compared with regular cases.

These differences stem entirely from postponed verification. The expedited service cases *with* postponed verification are especially prone to early termination and early benefit reduction. The benefits for 30 percent of expedited cases with postponed verification were either terminated early or decreased, compared to benefits for 21 percent of regular cases.[13]

Impact on Overpayment Error. Given the evidence that expedited service with postponed verification leads to at least some payment error in initial issuances, it would be useful to know the magnitude of the error in order to gauge whether this presents a relatively large or small concern for expedited service policy. We can use the rates of termination and benefit decrease (calculated above), along with our estimates of the expedited service rate and the postponed verification rate to estimate the potential national overpayment error attributable to postponed verification. We refer

Table 5. Early Termination and Benefit Decrease Rates by Expedited Service Status: Unadjusted and Adjusted for Household Characteristics, Certification Period, and Site

	Unadjusted		Adjusted	
	Termination	Termination or Benefit Decrease	Termination	Termination or Benefit Decrease
Expedited service cases				
Verification postponed	21.3 %***	34.6 %***	16.2 %***	29.5 ***
Verification not postponed	12.0 *	20.7	8.6	19.0
All	16.0 ***	26.5 **	12.0 **	23.8 ***
Regular cases	8.1	19.4	10.3	21.1

* Significantly different from regular cases at the 0.10 level.
** Significantly different from regular cases at the 0.05 level.
*** Significantly different from regular cases at the 0.01 level.

to this as "presumptive overpayment error," as it represents our best estimate of the dollar value of the additional error that results from the use of postponed verification.[14]

Our calculations show that the amount of error attributable to postponed verification is fairly small. For expedited cases with postponed verification, the estimated national presumptive overpayment error ranges from $14 million to $30 million per year (depending on whether one uses the adjusted or unadjusted rates). Perhaps large in absolute terms, these estimates of error are fairly small relative to the amount of food stamp benefits issued, making up only 0.1 to 0.2 percent of total issuances to all active cases. This compares to the cost of overall overpayments which for FY 1992 was 8.2 percent of total issuances.

SUMMARY AND CONCLUSIONS

All food stamp officials surveyed in this study voiced support for expedited service policy— they consider it successful in quickly alleviating the problems faced by people with inadequate access to food. However, these individuals as well as others who have been involved with expedited service since it was first implemented in 1979 have expressed a number of reservations about the policy, particularly the provisions legislated by the McKinney Act. Their concerns tend to focus on the burden of expedited service on local offices, the entitlement criteria, and the policy's potential to encourage fraud and error.

Expedited Service Caseload

Many food stamp officials felt that the McKinney Act, by expanding the criteria under which applicants qualify for expedited service, added a large pool of applicants to the expedited service caseload. Others felt that the proportion of expedited cases grew during the rapid rise in the overall food stamp caseload during the late 1980s and early 1990s. In addition to the size of the expedited caseload, many expressed concerns about the burden placed on local offices by requiring that expedited cases be processed within five days.

The expedited service rate, or the proportion of applicant households receiving expedited processing, remained essentially constant over the past decade despite the McKinney Act and the expansion of the food stamp caseload. We found that fully 90 percent of applicants qualified for expedited service because their income and resources were below the established limits. Only 10 percent of applicants qualified solely because of the provisions of the McKinney Act.

Because the food stamp caseload grew substantially over the past 10 years, the actual number of expedited service applicants increased by more

than 20 percent. This may explain why many perceived the McKinney Act to have had a sizeable impact on the expedited service rate. Yet, despite the size of the expedited service caseload, local offices are now more successfully processing applications within the required timeframe than they did a decade ago. More than three-quarters of expedited applicants received their benefits within five days, compared to 60 percent in the early 1980s.

Inequities in Expedited Service Criteria

Many program officials are concerned about the criteria added by the McKinney Act that provide expedited service to the special populations—homeless and those judged in danger of becoming homeless. They argue that these criteria dilute the effectiveness of expedited service and create inequities because they include households whose needs are less urgent than those of some applicants who do not qualify for expedited processing.

Expedited service households generally face quite severe economic conditions— their average income is approximately 30 percent of the average of regularly processed cases. By definition, the income and resources of households qualifying solely under the McKinney Act do not fall below the basic thresholds. As a result, their average monthly income is considerably above that of other expedited service households, though still well below the average for regularly processed cases.

These findings suggest that *on average,* the McKinney Act does give expedited service to households more urgently in need of assistance than those who do not qualify for expedited service. Because there is no simple and universal way to measure the urgency of a household's need, however, any criterion for expedited service that attempts to approximate need will introduce some inequities into the system—that is, some applicants who receive expedited service will seem to a reasonable observer to be less urgently needy than some applicants who do not qualify. Because the pure McKinney households generally face less severe circumstances than those who meet the traditional income and resource criteria, it is practically inevitable that the number of such inequities has increased since the act was passed.

The two groups added by the McKinney Act represent quite different types of households. The homeless households added by the act look very similar to the homeless households that also qualify under the income/resources criterion; the obvious exception is that the pure McKinney households have somewhat higher average incomes. In contrast, the demographic profile of households with excessive shelter expenses is very similar to that of regularly processed cases. Their distinguishing features

are high shelter expenses which are higher on average than regularly processed cases, and a lower average monthly income to support them. Thus, it seems likely that, to the extent that inequities have been created, they mainly concern households that qualify for expedited service because of excessive shelter expenses.

Overpayment Errors

Since expedited service policy was first implemented, officials and policymakers have been concerned that it posed a potential threat to program integrity. Their concerns have focused on three issues. Many have argued that, because households can obtain benefits with very little verification of their circumstances, this would lead some to either intentionally or unintentionally misrepresent their situation. The potential for error also increases, according to some arguments, because workers must process applications in a relatively short time frame, which can lead to careless mistakes. Finally, some have suggested that processing expedited cases detracts from the office's efforts to process regular cases, causing more error in that portion of the caseload.

Overpayment errors resulting from expedited service do not pose a substantial problem for the FSP. The one aspect of expedited policy that apparently does lead to some overpayment errors concerns the use of postponed verification. Patterns of benefit change in the early months after initial issuance showed that, after we control for differences in caseload composition, expedited service cases with postponed verification had higher rates of termination and benefit decrease than did either regularly processed cases or expedited cases that did not have postponed verification. If all of these "extra" early terminations represented eligibility errors—that is, if none of these cases should have received any food stamp benefits at all—this would imply that each year, erroneous payments of $14 million are issued nationwide because of postponed verification. If these errors were counted by the quality control system, they would add about 0.1 percentage point to the overpayment error rate for food stamps, raising the 1992 error rate from 8.2 to 8.3 percent.

Unanswered Questions

There is general agreement that expedited service policy fulfills an important function—it gets benefits to clients in need relatively quickly, allowing them to meet basic food needs without delay. However, this study did reveal two problems with current operations. First, not all who are entitled to expedited service receive their initial benefits within the five days mandated by law. Second, postponed verification does lead to some apparent overpayment in the initial food stamp issuance.

Future research might seek strategies for improving timeliness while decreasing the use of postponed verification. We know from the current study that some local offices are able to process virtually all their expedited applications within five days. We also know that at least some of these offices are able to do so without extensive use of postponed verification. Understanding the policies and practices of the more successful offices could allow others to improve their delivery of expedited service.

NOTES

1. The findings presented in this paper are condensed from a larger report: Bartlett, Susan, Nancy R. Burstein, and Elsie C. Pan, "Evaluation of Expedited Service in the Food Stamp Program," Cambridge, MA: Abt Associates Inc., June 1995. In addition to my co-authors on the report, William Hamilton at Abt and Barbara Murphy and Christine Kissmer of the Office of Analysis and Evaluation at FCS provided invaluable guidance and support throughout the entire study.

2. Esrov, Linda, James Hersey, John Mitchell, John Moeller, and Mary Dent. "Evaluation of Expedited Service in the Food Stamp Program." Washington, DC: U.S. Department of Agriculture, Food and Nutrition Service; and SRA Technologies, Inc., April 1987. We refer to this as the "1987 Study" throughout this paper.

3. This study includes only those applicants who were approved to receive food stamp benefits. Applicants denied benefits were excluded whether or not they were initially processed under expedited procedures.

4. We initially selected and recruited 60 local offices for the study. One dropped out just prior to the start of data collection activities.

5. We excluded offices with monthly caseloads below 300 because they could not support the necessary cluster sizes of applicants. These offices accounted for only 0.81 percent of the national total caseload.

6. Local offices located within a metropolitan statistical area (MSA) are considered metropolitan, and those outside an MSA are non metropolitan areas.

7. The analyses presented in this section are based solely on the classification(s) recorded in the case file. The analysis does not "second guess" the worker's classification by examining, for example, the recorded amounts of income and resources. We examined the distributions for 1991-1992 and 1993 separately, and found that they were virtually identical.

8. As Table 4 shows, 58 percent had zero gross income. Of the 42 percent with some income, 13 percent have reported incomes of less than $150, and 29 percent have reported incomes of $150 or more. The latter groups should not be entitled to expedited service on the basis of their income, suggesting that they were erroneously classified in the case file records. Some, however, may qualify for expedited service according to other criteria.

9. It is possible that some workers recorded some cases as qualifying under only the homeless criterion even though they met other criteria as well.

10. Includes cases qualifying for expedited service (8 percent) that were designated as regular cases but received their benefits within five days, thus in effect receiving expedited service.

11. This extensive data collection would be required because quality control reviews currently conducted on expedited service cases apply more lenient standards (because of the use of postponed verification) than are applied to regular cases. The more stringent reviews would be required to estimate total payment error accurately.

12. The models also include site indicators and the length of the initial certification period, an indicator of the eligibility worker's assessment of the stability of the household's circumstances.

13. Cases that qualify for expedited service solely on the basis of the McKinney Act exhibit patterns similar to those of other expedited service cases.

14. States are not currently held liable for any payment error to expedited service cases that are processed according to policy, nor do these payment errors count in the calculation of quality control error rates.

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Access of FSP Participants to Food Retailers

Richard Mantovani, Lynn Daft, James Welsh, and Theodore Macaluso

INTRODUCTION AND BACKGROUND

The Food Stamp Act of 1977, as amended, declared it the policy of Congress "to safeguard the health and well-being of the Nation's population by raising levels of nutrition among low-income households." To alleviate hunger and malnutrition, Congress authorized "a food stamp program. . . which will permit low-income households to obtain a more nutritious diet through normal channels of trade by increasing food purchasing power for all eligible households who apply for participation."[1]

The ability of the Food Stamp Program (FSP) to meet these health and nutrition goals depends on the nature and characteristics of the "normal channels of trade" actually accessible to program participants. Retail food stores are one of these channels. Because access to retail food stores is critical to the success of the FSP, a broad base of over 200,000 stores has been authorized to accept food stamps. The magnitude of this number becomes more meaningful in light of the total number of supermarkets in the United States, which is about 30,000. In addition to supermarkets, FSP-authorized stores include large and small groceries, convenience stores, gas/grocery stores, food delivery routes, general stores, and health food and other specialty stores (such as meat and fish markets).

"At the basic level of physical proximity, are food stamp-authorized retailers located where food stamp participants live?"

While this strategy of broad authorization is likely to increase access to food stores, the following questions related to access remain:

- At the basic level of physical proximity, are food stamp-authorized retailers located where food stamp participants live?
- If so, do the retailers accessible to participants stock foods that support a nutritious diet? What is the quality and variety of food sold by food retailers and accessible to participants?
- What is the cost of a market basket at the stores to which participants have access?

The Food and Consumer Service (FCS) has initiated a research program to address these issues. This paper, which presents the results of part of this effort, documents an initial exploration of the first two issues above. We

address them by answering the question: *how much distance must food stamp participants travel to reach an authorized supermarket or large grocery store?* We use distance to a supermarket or large grocery store, rather than distance to any authorized store, because supermarkets and large grocery stores are the mostlikely types of stores to stock a wide variety of food.[2] These two types of authorized food retailers became a proxy measure for the true topic of interest: access to a variety of high-quality food at competitive prices. Subsequent studies funded by FCS will measure food quality and price directly, rather than through this proxy measure of store type.

DATA AND METHODS

The sites reported on in this paper were selected from the 40 primary sampling units (PSUs) used in a nationally representative study on retailer characteristics sponsored by FCS. We selected 5 of the 40 sampling units on a purposive basis to develop a cross-section of areas that differ in terms of urbanization, income, and ethnic characteristics. The five PSUs comprised eight sites for the analysis.[3] Three of the sites were highly urbanized areas: the South East area of Los Angeles City; Baltimore, Maryland; and Pasadena, California. Another three were smaller metropolitan statistical areas (MSAs) adjacent to rural areas: Kanawha and Boone counties, West Virginia; Dona Ana County, New Mexico; and Antelope Valley, Los Angeles County, California. The remaining two sites were non-MSA (or rural) areas with small central cities or towns: Dillon and Marion counties in South Carolina, and Otero and Lincoln counties in New Mexico.

We derived measures for proximity using geographic information systems (GIS) software to locate and map the street address of authorized food retailers and FSP participants in each community.

Communities were described according to information obtained from site visits and census demographics. We also used information on food stamp issuances to participants residing in a particular ZIP code area and redemptions at all authorized stores within the ZIP code to calculate an inflow/outflow measure. This measure indicates where food stamps are flowing throughout the area and identifies areas in which retailers capture more food stamps than are locally issued. The major sources of data were the FCS authorized retailer tracking system (Store Tracking and Redemption Subsystem), participant data files obtained from the respective state or county jurisdictions, 1990 census data, and interviews conducted with local food system experts during a set of visits to the sites.

RESEARCH FINDINGS

Tables 1A and 1B present an overview of findings. For the three types of areas, Table 1A shows the proportion of food stamp participants living

Table 1A. Distances of Food Stamp Recipients to Authorized Supermarkets and Large Grocery Stores

Area	Total Recipients	Under .25 Mile	Under .5 Mile	Under 1 Mile	Under 2 Miles	Under 5 Miles	Median Distance	Mean Distance
Highly Urbanized Areas								
Baltimore	13,393	44.5%	95.7%	100.0%	100.0%	100.0%	.27	.28
South East LA	28,319	47.3%	90.4%	100.0%	100.0%	100.0%	.26	.28
Pasadena	6,324	52.3%	93.0%	100.0%	100.0%	100.0%	.24	.26
Smaller MSAs								
Kanawha and Boone Counties	14,129	16.0%	39.2%	68.7%	82.1%	97.2%	.60	1.13
Palmdale	4,325	16.9%	38.3%	75.7%	85.6%	95.7%	.57	1.16
Dona Ana County	9,843	3.1%	12.5%	44.0%	57.4%	63.7%	1.23	5.52
Non-MSAs								
Dillon and Marion Counties	4,987	16.4%	44.2%	84.3%	87.1%	92.2%	.54	1.51
Otero and Lincoln County	3,009	27.9%	48.8%	71.0%	80.7%	93.0%	0.52	2.06

Source: Macro International Inc. The Authorized Food Retailers Characteristics Study. Contract No. 53-3198-3-007. USDA/ Food and Consumer Service, Office of Analysis and Evaluation. 1994.

[redacted]

Area	Total Redemptions (In Million of Dollars)	Redemption to Issuances Ratio (Study Areas)	No. of Sub-Areas with Redemption to Issuances Ratio*	Number of Areas With Redemption to Issuance Ratio		
				0-0.74	0.75-1.25	> 1.25
Highly Urbanized Areas						
Baltimore	70.4	0.94	6	1	4	1
South East LA	47.5	0.93	4	2	1	1
Pasadena	9.8	0.94	3	1	0	2
Smaller MSAs						
Kanawha and Boone Counties	34.1	1.24	14	4	4	6
Palmdale	7.0	0.74	3	2	1	0
Dona Ana County	18.0	0.72	4	3	1	0
Non-MSAs						

within a given distance of a supermarket or large grocery with over $500,000 in sales.[4] Table 1B presents information on food stamp dollar flows within each of the study areas using the redemptions-to-issuances ratio. This table presents the overall redemption-to-issuances ratio for the study area and the number of sub-areas with a lower, a higher, or roughly the same level of redemptions as issuances.

Highly Urbanized Areas

In the three highly urbanized areas in Table 1A, over 90 percent of food stamp recipients live within one-half mile of a supermarket or large grocery, and all participants live within one-mile of such a retailer. The median distance is a quarter of a mile. The three areas vary little in terms of distance of participants from retailers, although there are distinct differences among the three cities with regard to retailer availability and participant utilization.

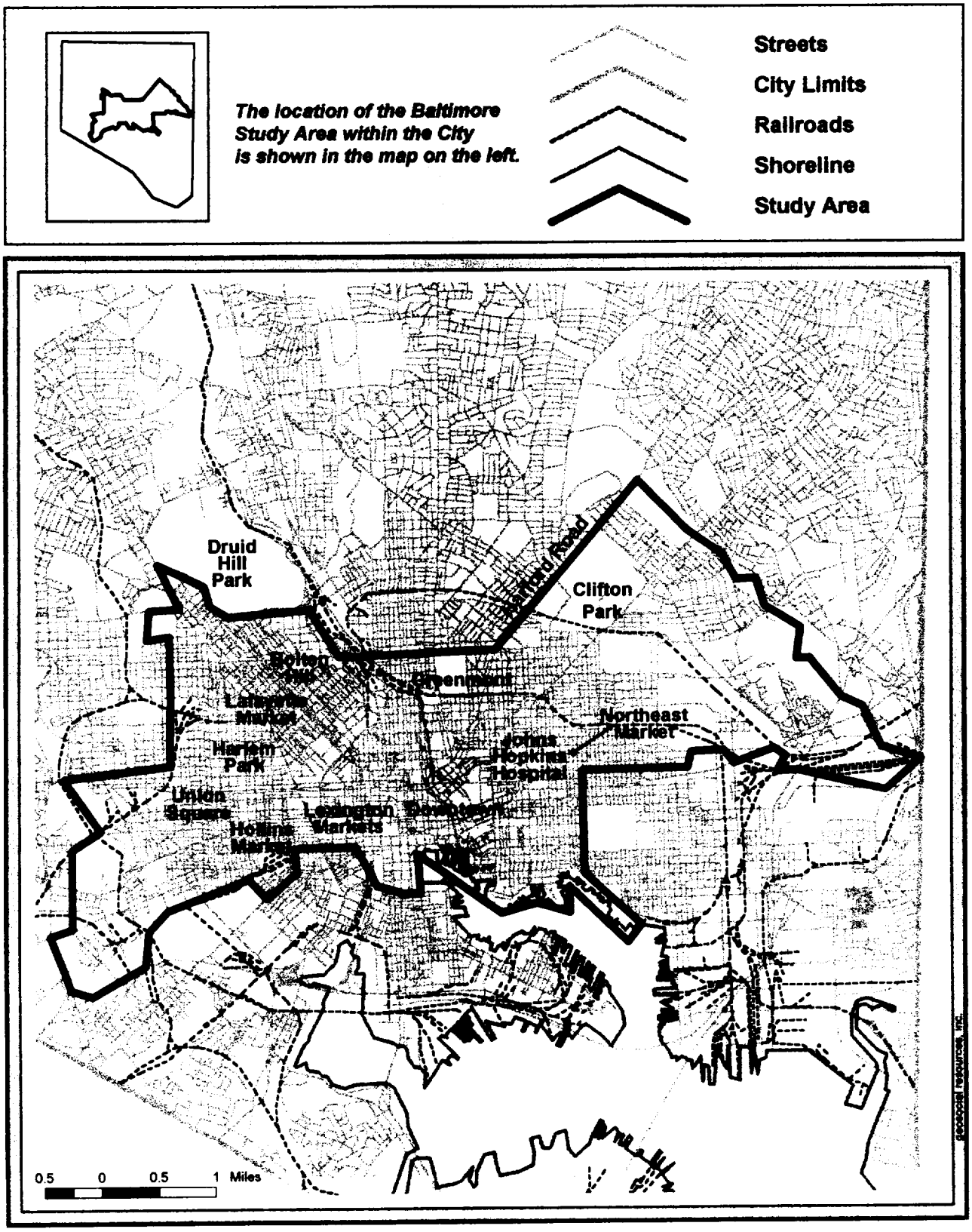
Baltimore, Maryland. The study area in Baltimore City is near the center of the city (Figure 1). Overall, approximately 74,000 households and 207,000 individuals live within this area.[5] African Americans constitute approximately two-thirds of the population, ranging from 64 percent in the Union Square area to 93 percent in the Harlem Park area. Hispanics constitute less than 1 percent of the population. The 1990 census indicates that about one-fifth to one-half of the households are under the poverty line. With regard to transportation, there is an extensive light rail and bus system and a new subway system that facilitates travel within the central city area. Automobile access is somewhat limited, since the 1990 census reported that from one-half to two-thirds of the households do not have access to an automobile.

FSP participants reside largely in two large clusters within the area. The first cluster is in the eastern part of the city, generally in the Greenmount and Johns Hopkins Hospital areas. The second cluster is located on the west side of the city and covers the areas from Bolton Hill to Union Square. Lexington Market, Downtown, and Clifton Park comprise areas with fewer participants.

"Because [supermarkets and large grocery stores] are well distributed within the Baltimore study area, nearly all the participants live within one-half mile of a large retailer."

It is noteworthy that the study area has proportionately fewer supermarkets and large grocery stores than other areas in Baltimore City. Supermarkets and large grocery stores account for less than 4 percent of the retailers in the core area, which is lower than the percentage in the Baltimore City area as a whole and much less than the national percentages for supermarkets and large grocery stores. However, because these stores are well distributed within the area, nearly all the participants live within one-half mile of a large retailer (Figure 2). Of the participants who are not

Figure 1. Baltimore study area, general orientation map



within one-half mile of a supermarket or large grocery, many are clustered in several pockets (Figure 2).

An analysis of the inflow and outflow of redemptions and issuances by ZIP code areas and other information on redemptions indicates that the use of large stores varies considerably.[6] In Clifton Park, supermarkets are an important source of food for FSP participants, while in Greenmount, they are a minor source. Interviews with local food system experts suggest that this pattern is influenced by widely dispersed "market places" within the city. These urban indoor farmers markets (Lexington, Lafayette, Hollins, and Northeast Markets, for example) are used to a large degree by local residents. They supply a wide range of perishable foods throughout the year and serve as alternatives to supermarkets for certain types of foods.

Pasadena, California. Pasadena, a city of 23 square miles with a population of 131,591, is located at the southern foot of the San Gabriel Mountains, approximately 15 minutes by car from downtown Los Angeles (Figure 3). The city is economically diverse, with some relatively affluent areas (toward the eastern end of the city) and some low-income areas. The analysis in Pasadena focused on an area northwest and north of the Foothill Freeway and Colorado Boulevard areas. Total population is 80,685, and no one ethnic group is notably dominant. In the northwest portion of the area, approximately 40 to 50 percent of the population is below 125 percent of the poverty level.

"More than 90 percent of food stamp households [in the Pasadena-Los Angeles study area] are located within one-half mile of a supermarket or large grocery."

More than 90 percent of food stamp households are located within one-half mile of a supermarket or large grocery, and more than 50 percent are located within one-quarter of a mile. Figure 4 indicates that FSP participants farther than one-half mile from a large food store are scattered except for those in a diagonal pocket in the northwest corner and a vertical stretch east of South Los Robles Avenue.

There are several large national chain branch food stores in the area, although none is in the lower-income northwest section of the city. Analysis of redemption data indicates that residents of the northwest part of the city, although they live near larger stores, tend to use their food stamps mainly in other areas; food stamps they do use in the northwest go toward purchases from small retailers in that area. (It is important to remember that this paper explores proximity to supermarkets/large grocery stores, not the quality, variety, or price of food available in these stores. Further research will explore whether these redemption patterns reflect quality, variety, price of food available in different stores.)

Figure 2. Baltimore study area, half-mile access to FSP SM/GS with annual sales over 500,000

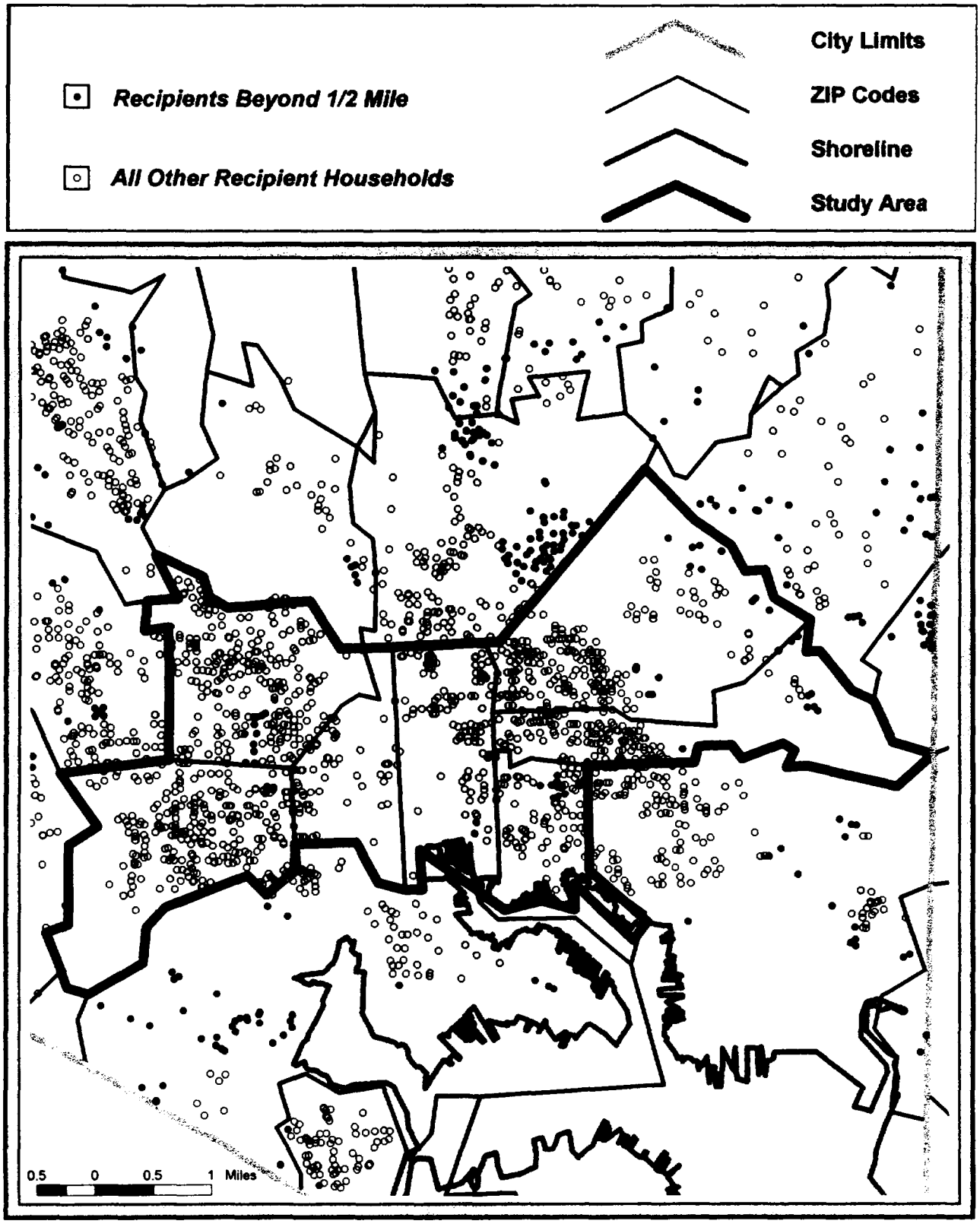


Figure 3. Pasadena-Los Angeles study area, general orientation map

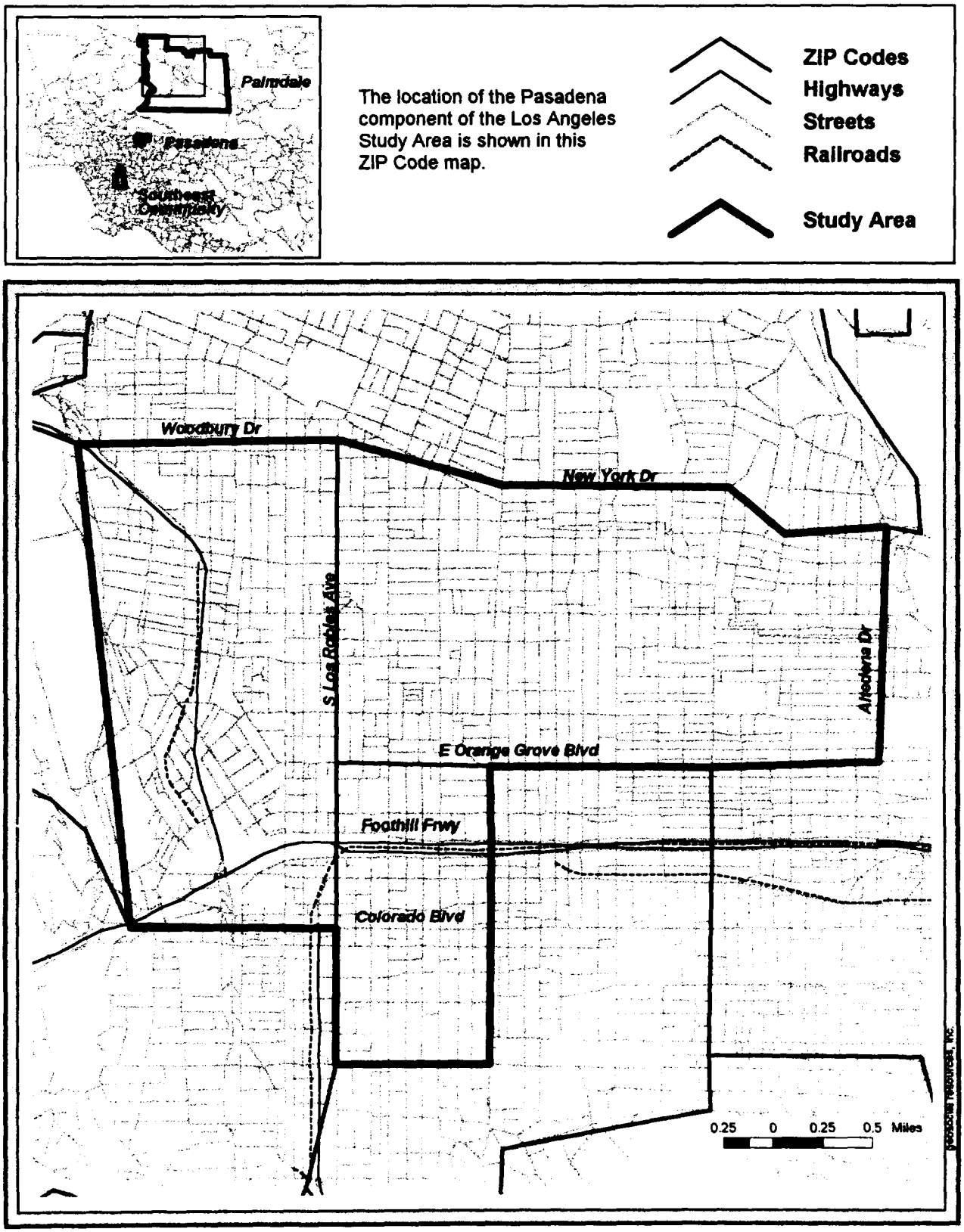
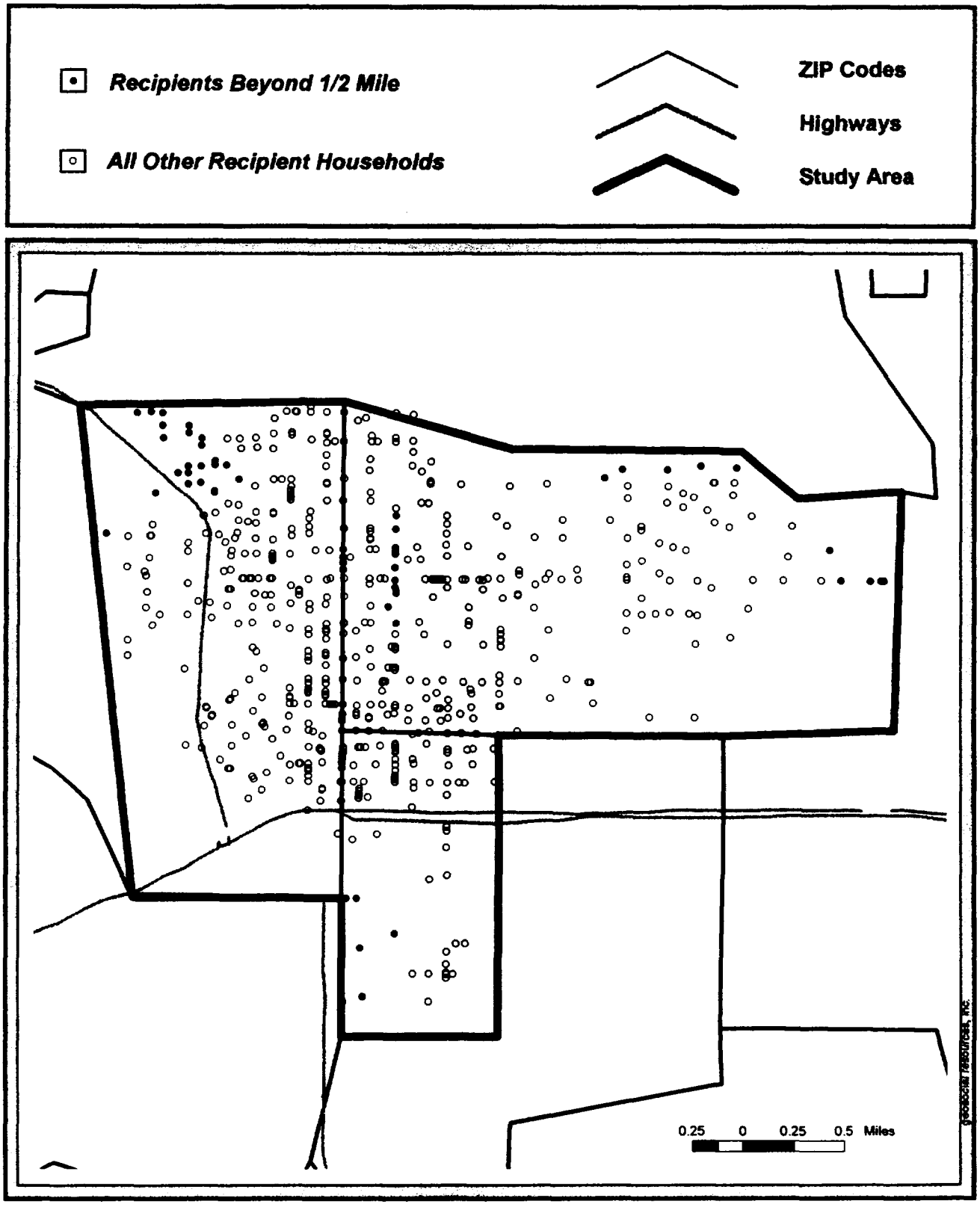


Figure 4. Pasadena-Los Angeles study area, half-mile access to FSP SM/GS with annual sales over $500,000



South East Los Angeles. This area, south of downtown Los Angeles, contains the sections of Florence and Watts in the east and what is known as South Central Los Angeles (Figure 5). The study area, which is low-income and highly urban, has a population of 240,444, 60 percent of whom are Hispanic. In most neighborhoods, the range of persons living below 125 percent of the poverty line is from 40 to over 50 percent. The study area is surrounded by other areas with similar or higher rates of poverty, except to the southeast. Residents must shop within the area or in similar areas unless they are willing to travel long distances. The bus system is extensive and provides adequate access, although there is some question concerning its safety and the ease of making connections. There is also a transit subway stop on the eastern edge of the area. The 1990 census indicates that one-quarter to one-third of the population in these areas has no access to a car.

"The 1990 census indicates that one-quarter to one-third of the population in [the South East Los Angeles study area] has no access to a car."

Ninety percent of the food stamp participants live within a half-mile of an authorized supermarket or large grocery store. In general, these stores redeem about three-quarters of the total food stamps redeemed in the area. It is clear that food stamp participants do their major shopping at large stores. Figure 6 shows where FSP participants live. While most reside within one-half mile of a supermarket or large grocery store, participants outside this distance are not scattered but live in a few distinct clusters.

The pattern of redemptions within the area shows that food stamps flow from some communities to others within the study area. For instance, the redemption-to-issuance ratio in the Florence area is greater than that in other areas in the city.

Smaller Metropolitan Statistical Areas

Small MSAs are defined by a moderately sized city surrounded by sparsely populated areas. The three small MSAs in this study were Kanawha and Boone counties, West Virginia; Dona Ana County, New Mexico; and Palmdale, California, which is part of the Los Angeles MSA but distinct from the southern parts of the county just described. Unlike participants in the highly urban areas, few participants in small MSAs have a supermarket or large grocery store within one-half mile of their residence. Over two-thirds of FSP participants in Kanawha and Boone counties live within one mile of a larger store, and 82 percent live within two miles. In Palmdale, 76 percent live within one mile and 86 percent live within two miles of a larger store. In Dona Ana County, 44 percent live within one mile, and 58 percent live within two miles of a large retailer. Because of the variation in the size of these areas and the dispersion of participants within them, we have geo-mapped proximity using criteria that differ by area: one mile in the West Virginia and New

Figure 5. Southeast Community-Los Angeles study area, general orientation map

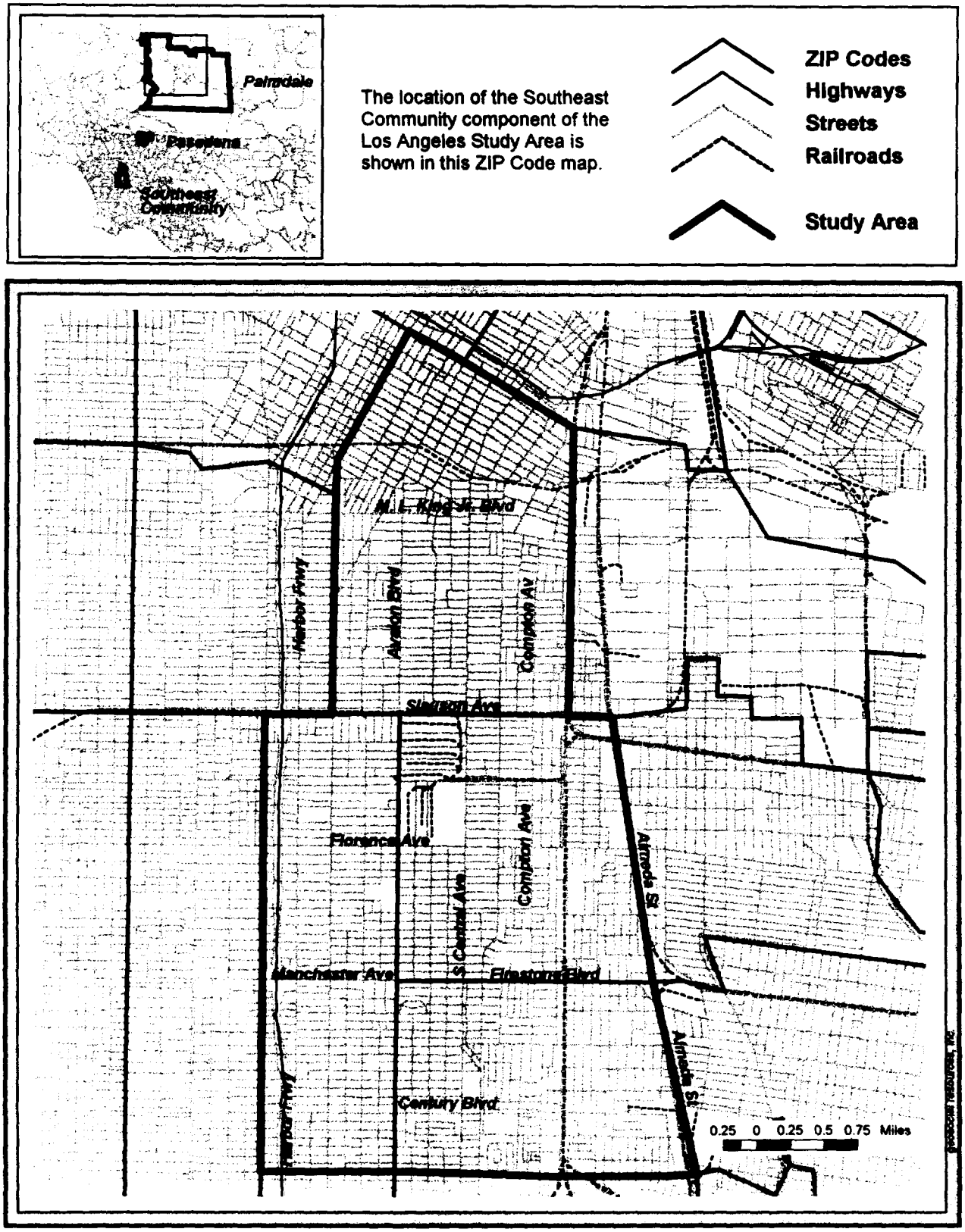
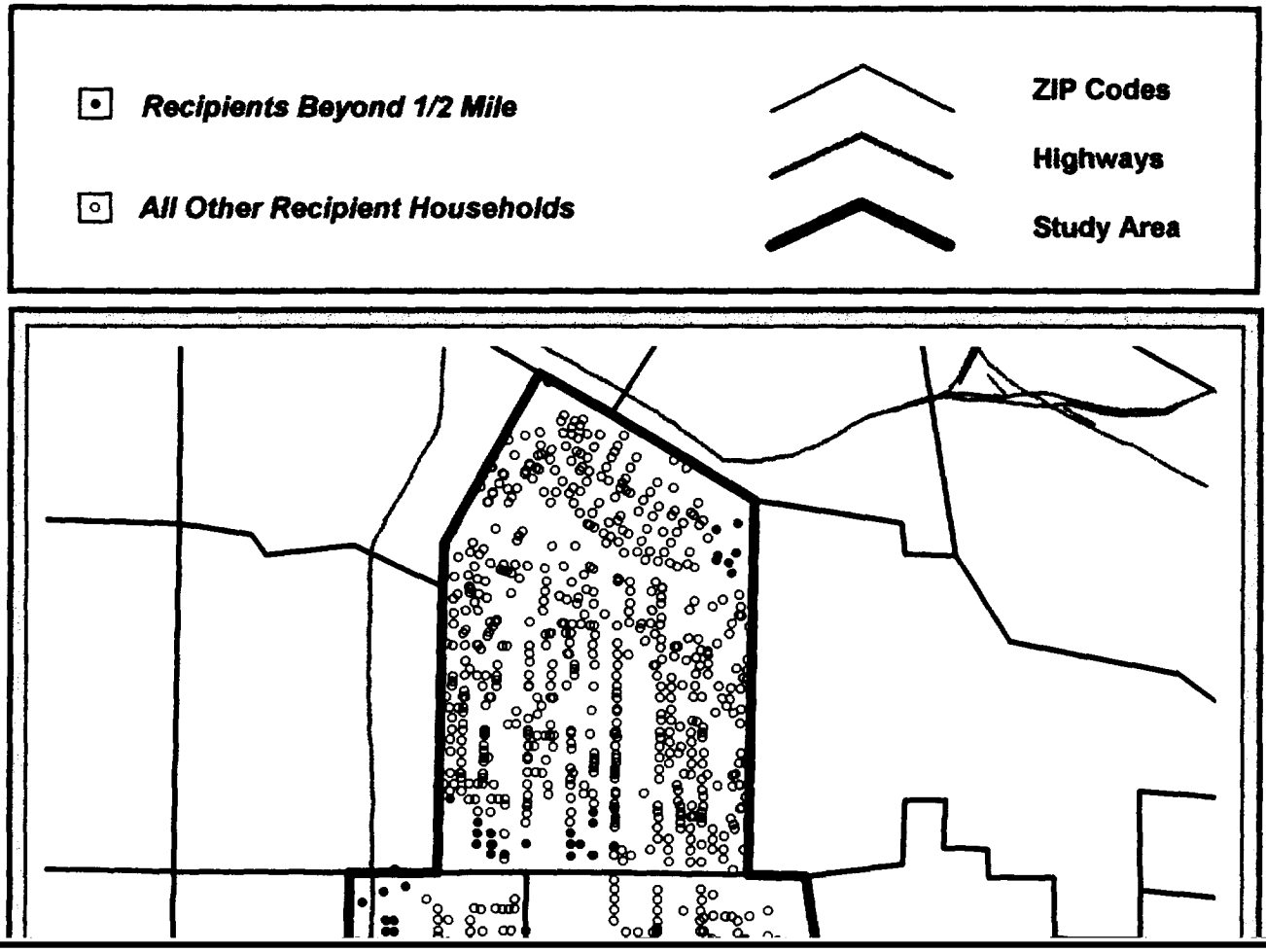


Figure 6. Southeast Community-Los Angeles study area, half-mile access to FSP SM/GS with annual sales over $500,000



Mexico counties, and one-half mile in the Palmdale area, where participants are largely located in the city. Like the highly urbanized areas, the small MSAs differ distinctly in terms of basic demographic/geographic characteristics and access patterns.

Kanawha and Boone Counties. Kanawha and Boone counties are located in south central West Virginia (Figure 7). Kanawha County, the most populous in the state, is the home to Charleston, the capital and the central city of the Charleston MSA. Boone County, although contiguous to Kanawha County, is not part of this MSA and is not considered to be economically integrated with Charleston. Kanawha, the larger county, covers more than 901 square miles and had a population of approximately 207,000 in 1990. Over one-quarter of the population (58,000) is located in the city of Charleston, and a large portion of the remaining population resides in areas along the Kanawha River. Other population centers (e.g., Elk View and Clendenin) lie along the Elk River in the northern portion of the county.

Boone County has a population of only 25,870 spread over 503 miles. Madison and Danville, located near each other in the northwest portion of the county, had populations of 5,000 each in 1990. Other small towns within the county lie along or just off the state highways. Other differences between the counties relate to the level of urbanization—71 percent in Kanawha County and 12 percent in Boone County—and the poverty level, which is almost two times as high in Boone County as it is in Kanawha County (30 percent and 15 percent, respectively).

Both the mountains and the Kanawha River have been instrumental in the location of and access to communities. The majority of the population of Kanawha County is dispersed in the mountain hollows and along the northern and southern banks of the Kanawha River in mid-sized and small communities. Because much of Kanawha and all of Boone County are rural and isolated, people depend on the automobile for much of their daily activities. Data from the 1990 census indicate that 85 percent of the households in Kanawha County and Boone County have access to an automobile.

"Within Charleston . . . 50 percent of FSP households live within a half-mile of an authorized large retailer. Outside of Charleston, 30 percent live within a half-mile."

Geographically, the patterns of access can best be described in terms of several subareas (Figure 8). As expected, in Kanawha County, Charleston and the surrounding towns have the majority of large stores and account for the largest proportion of redemptions within the study area. The data within Charleston show that 50 percent of FSP households live within a half-mile of an authorized large retailer. Outside of Charleston, 30 percent live within a half-mile of an authorized large retailer.

Figure 7. West Virginia study area, general orientation map

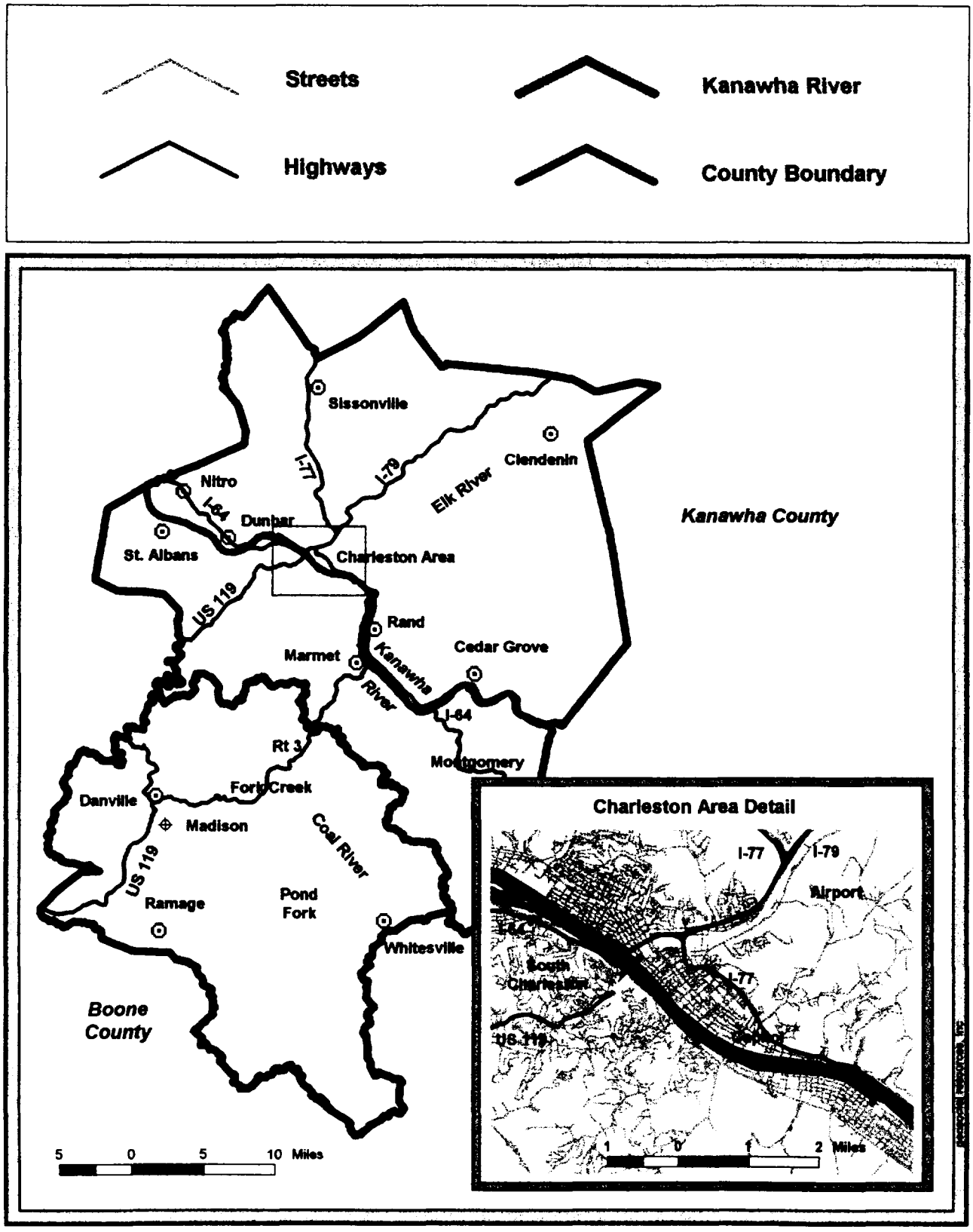
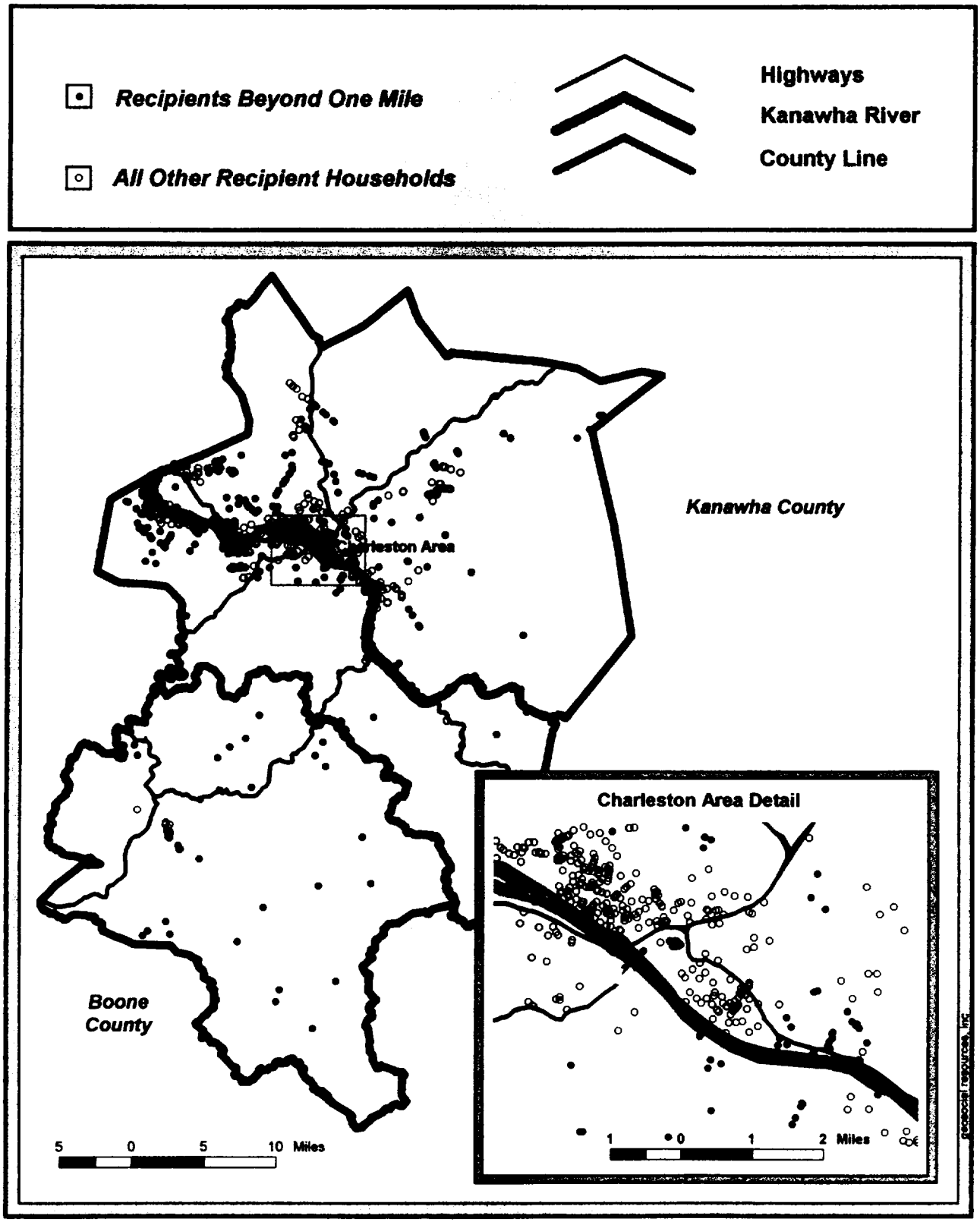


Figure 8. West Virginia study area, one-mile access to FSP SM/GS with annual sales over $500,000



Boone County consists of numerous hamlets scattered along its roads and highways. All are close to a retailer, and some are near a large retailer. The two small population centers, Madison and Danville, contain most of the large stores in the county, although the rest of the county is serviced by nearby smaller stores.

Antelope Valley and Palmdale. Antelope Valley lies between the San Gabriel and Tehachapi mountains, extending to the Mojave Desert outside Los Angeles County. The area is largely arid and is noted for extremes in temperature. The valley is home to two adjacent cities, Lancaster and Palmdale. Lancaster, the northernmost city, had an estimated population of 107,000 in 1993, while Palmdale is slightly smaller, with an estimated population of 90,000. This analysis focuses on Palmdale and areas to the southeast of it (Figure 9).

Palmdale covers about 100 square miles and grew from 12,277 to 68,842 between 1980 and 1990. Unincorporated outlying communities include the population centers of Littlerock (population: 10,000), Pearblossom (population: 800), and Llano (population: 2,000). The area is characterized by tract housing, ranches, and farms. Public transportation within Palmdale provides access to most developed parts of the city and to the nearby city of Lancaster. Outside of the city, public transportation is somewhat limited. Almost one-quarter of the population is of Hispanic origin, and the overall household poverty rate is just below 10 percent. The majority of FSP participants are located in Palmdale. Although the study area encompasses a large territory, the population is concentrated in Palmdale. This helps to explain the fact that three-fourths of the participants are within a mile of a larger supermarket or grocery store (Figure 10).

"Compared with other [small MSA] sites . . . , the density of authorized retailers is low in the [Palmdale-Los Angeles] study area."

Compared with other sites in this category, the density of authorized retailers is low in the study area. This may reflect the relatively low percentage of food stamp households in the area (12 percent), or perhaps food retailers have not expanded to match the rapid population growth. Whatever the cause, it appears that Palmdale participants shop in nearby Lancaster, as reflected in the redemptions and issuance data and our interviews with local experts.

Retailer choices in rural areas outside the city are more limited. The ratio of redemptions to issuances suggests that participants living in the sparsely populated region south and east of Palmdale travel outside their communities for some of their shopping. Although these households constitute a minority of the FSP population within the study area, they represent a recognizable enclave that has problems obtaining food.

Figure 9. Palmdale-Los Angeles study area, general orientation map

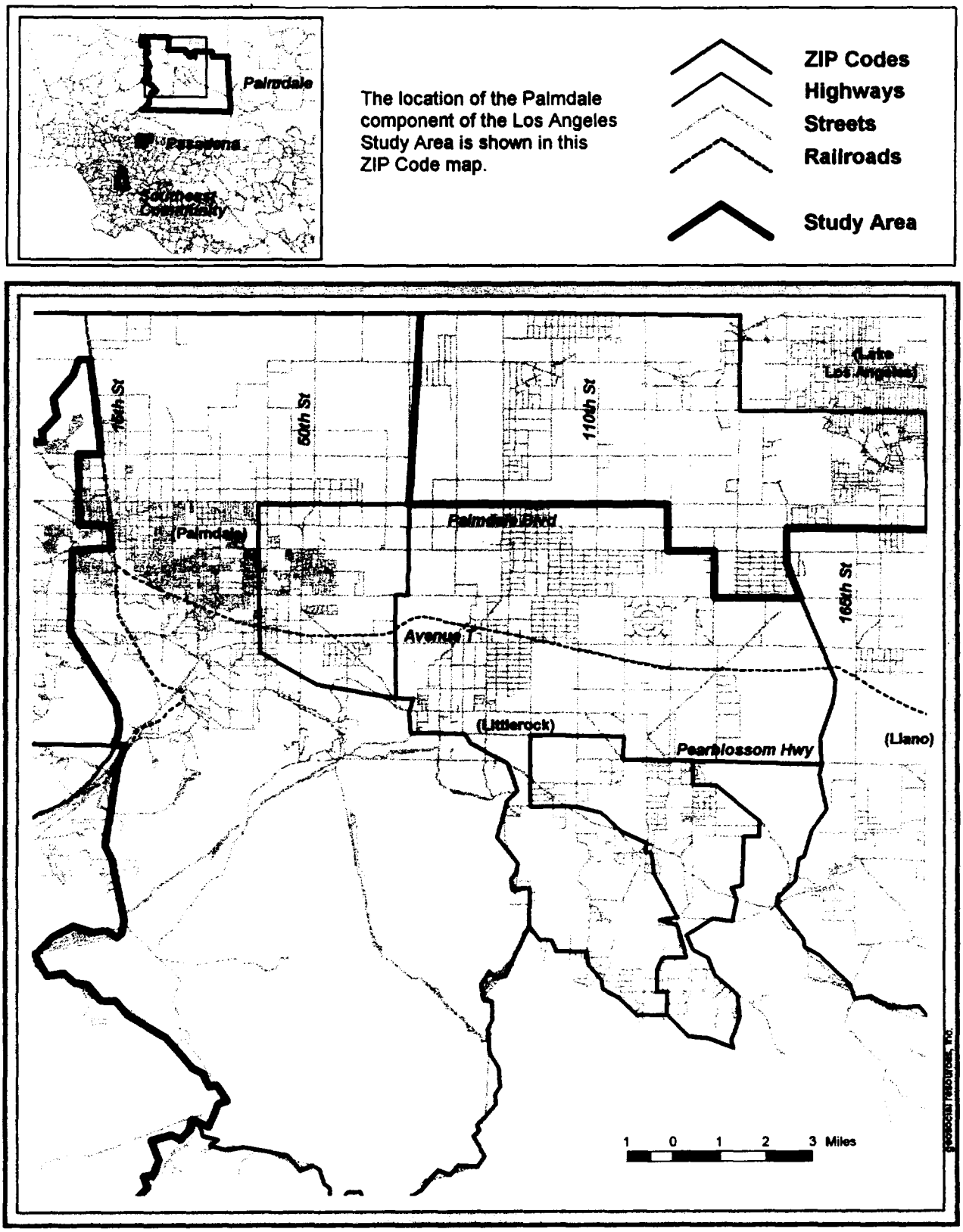
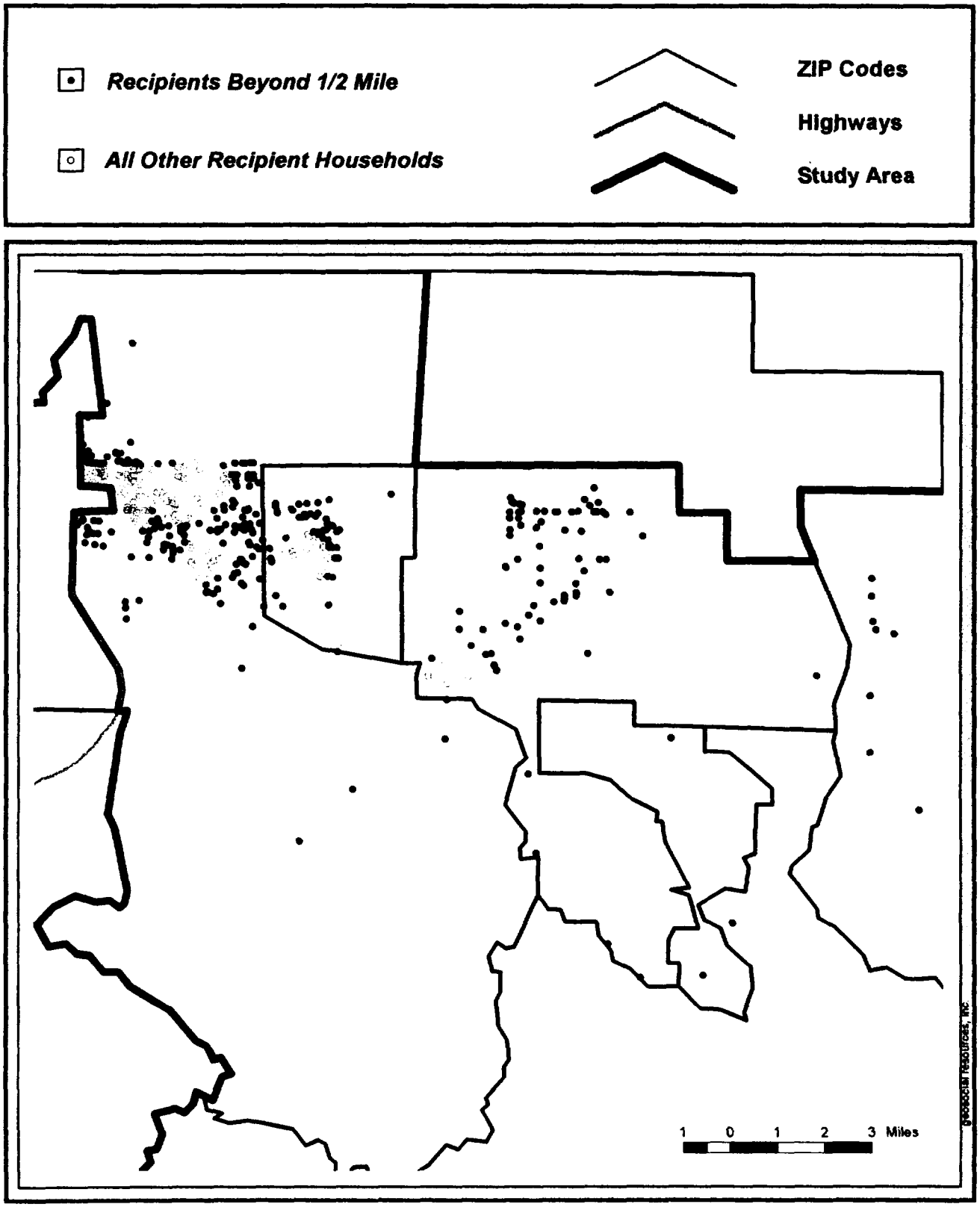


Figure 10. Palmdale-Los Angeles study area, half-mile access to FSP SM/GS with annual sales over $500,000



Dona Ana County. Dona Ana County comprises 3,819 square miles and has a population of 135,500, almost 74 percent of whom live in urban areas. The major feature defining the county is the Rio Grande River, which runs north to south through the Mesilla Valley to El Paso (Figure 11). Most of the population resides along the river. In the northwest, there are numerous small agricultural towns (e.g., Hatch and Rincon). In the approximate center of the county is the city of Las Cruces, which has a population of 62,000. Several population centers and colonias, which lie in the southeastern portion of the county, have easy access to El Paso, Texas.[7] The majority of the population (55 percent) in the county is of Hispanic descent. Dona Ana has a poverty rate of over 20 percent.

"Almost all of the larger stores in the [Dona Ana County study area] are located in and around [Las Cruces], and more food stamps flow to these stores than to other stores in the county."

The distance from households to stores varies considerably. Most of the FSP participants are within two miles of a larger store, although the distance is greater especially outside Las Cruces (Figure 12). Access in Dona Ana County reflects the prominence of Las Cruces. For persons in the northern county and in parts of the southern county, Las Cruces is less than an hour's drive on the interstates.

Almost all of the larger stores in the area are located in and around the city, and redemption patterns show that more food stamps flow to these stores than to other stores in the county.

Travel to shopping areas in Texas is an option for those on the New Mexico-Texas border. Few large stores are available to the population in the towns along the southern tier of the county. This suggests that households in these areas either travel to Las Cruces or, more likely, into Texas. It is evident that Las Cruces acts as a regional market area that attracts shoppers from all over the county, and additional services are provided in Texas.

Rural Non-MSAs

Two rural non-MSAs—Dillon and Marion counties in South Carolina, and Otero and Lincoln counties in New Mexico—were investigated. As Table 1A shows, most FSP participants in these areas do not live far from food retailers. In the South Carolina counties, 84 percent of the participants live within 1 mile of a large grocer, compared with 71 percent in Otero and Lincoln counties.

Dillon and Marion Counties, South Carolina. In 1990, the census reported approximately 29,000 and 34,000 individuals living in Dillon and Marion counties, respectively. Lying in the northeast part of the state, these counties, which are largely rural (Figure 13), have a number of small towns or cities. The inset map in Figure 13 depicts a core area

Figure 11. Dona Ana County, New Mexico, study area, general orientation map

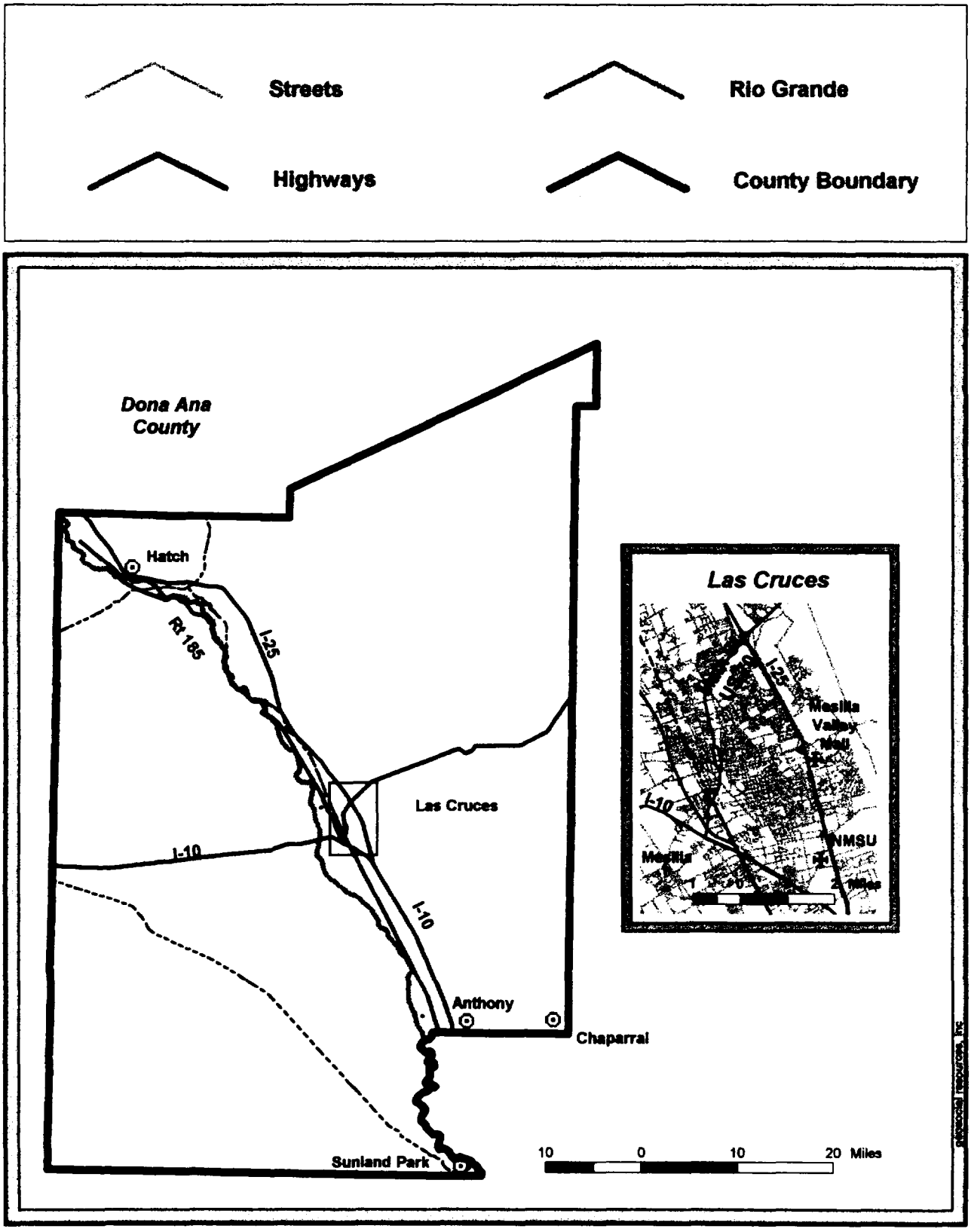


Figure 12. Dona Ana County, New Mexico, study area, one-mile access to FSP SM/GS with annual sales over $500,000

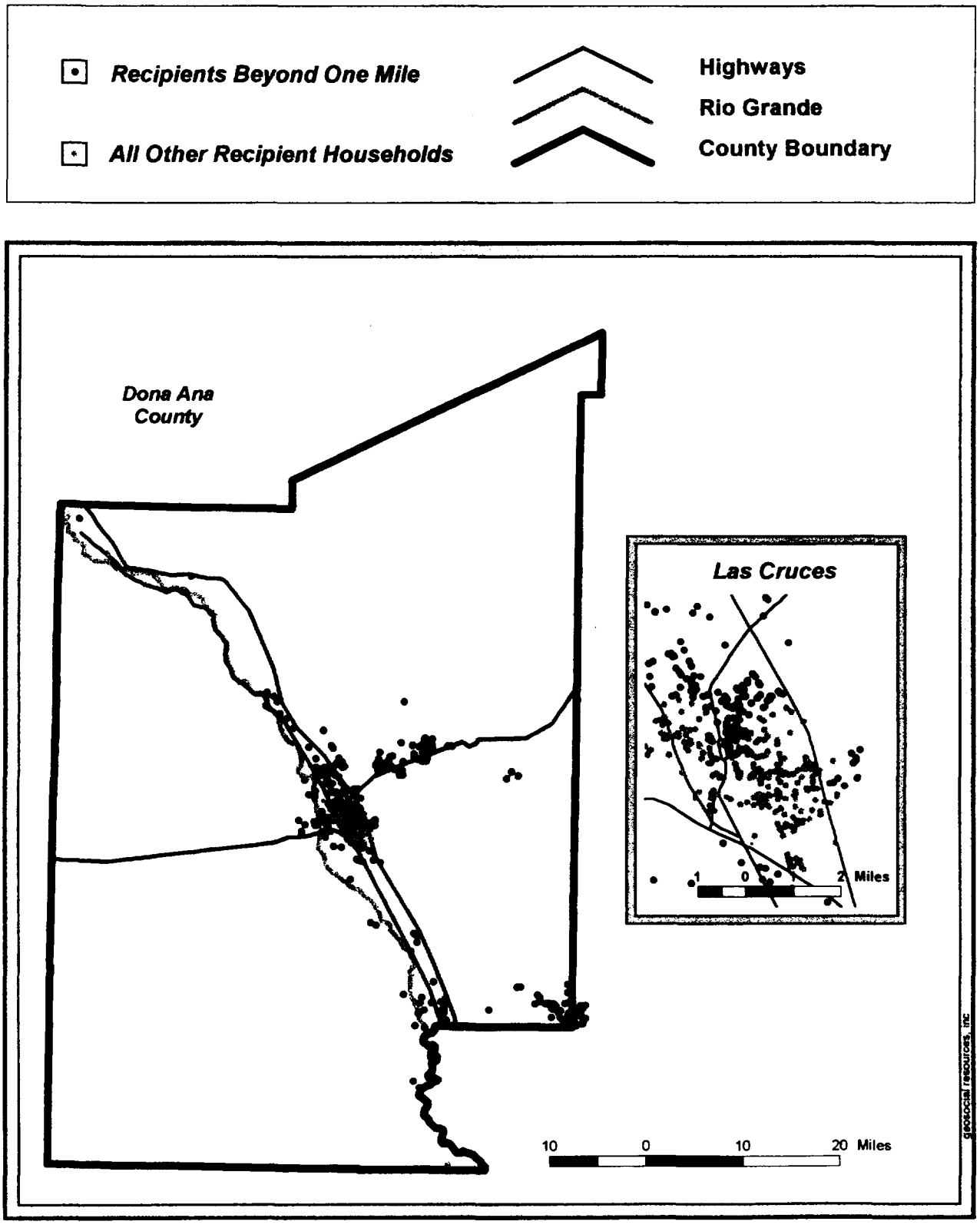
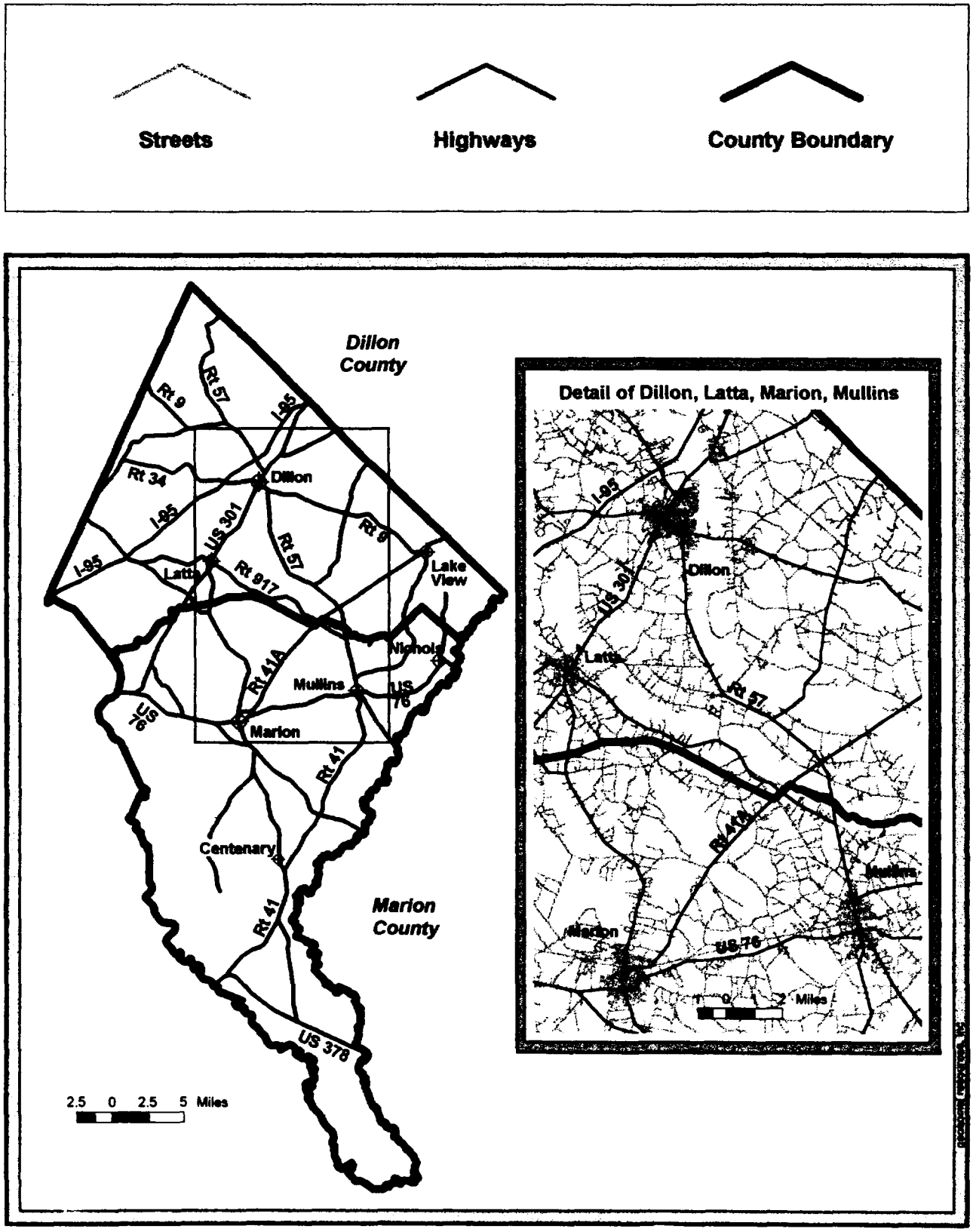


Figure 13. South Carolina study area, general orientation map



containing four population centers, ranging from 2,000 to 8,000 persons. The percentage of households below the poverty line in 1990 was approximately 25 percent in Dillon and Marion counties, and the proportion of the population identifying themselves as minorities was approximately 50 percent.

The central area defined by the cities of Dillon, Marion, Mullins, and Latta redeems most of the food stamps. Most of the study population resides in this area, and most of the retailers are also located here. Individuals living in other parts of the county are drawn to this core area to shop. Some parts of the county are unserved by larger stores (Figure 14). The areas in the northern end of Dillon County and the southern end of Marion County do not tend to have large stores. Food stamps issued to individuals in these areas flow to the core area. There seems to be little outflow of food stamps from the area, indicating that few individuals are shopping in the larger metropolitan areas to the north (North Carolina) and south (Florence) of the area. According to our local interviews, this reflects participant satisfaction with some local food retailers rather than difficulty in reaching other areas.

"There seems to be little outflow of food stamps from the [South Carolina study area], indicating that few individuals are shopping in the larger metropolitan areas to the north and south."

Otero and Lincoln Counties, New Mexico. Otero and Lincoln counties constitute a large sparsely populated area in south central New Mexico (Figure 15). Otero County, covering 6,625 square miles, is east of Dona Ana County and has a population of 52,000, half of which lives in Alamogordo. Lincoln County is north of Otero County and covers an area of 4,832 square miles. It has a population of 12,200, most of which lives close to the Otero County border. The Sacramento Mountains are the major feature of these counties. They define the eastern edge of Otero County and continue into Lincoln County. Otero County is home to a substantial Mescalero Apache Indian Reservation and Fort Bliss. The mountain and desert areas that dominate these counties have caused it to be largely unpopulated and undeveloped.

The poverty rate is close to 17 percent throughout the two-county area. The greatest proportion of individuals at or near the poverty level (greater than 50 percent) resides on the Mescalero Indian Reservation. Poverty levels are relatively low in the southern tier of Lincoln County and the Alamogordo area.

Alamogordo and Ruidoso, another population center, provide the major shopping opportunities in the two-county area. They have most of the major supermarkets and large groceries, and most of the redemption activity occurs here. In addition to serving their own populations, they

Figure 14. South Carolina study area, one-mile access to FSP SM/GS with annual sales over $500,000

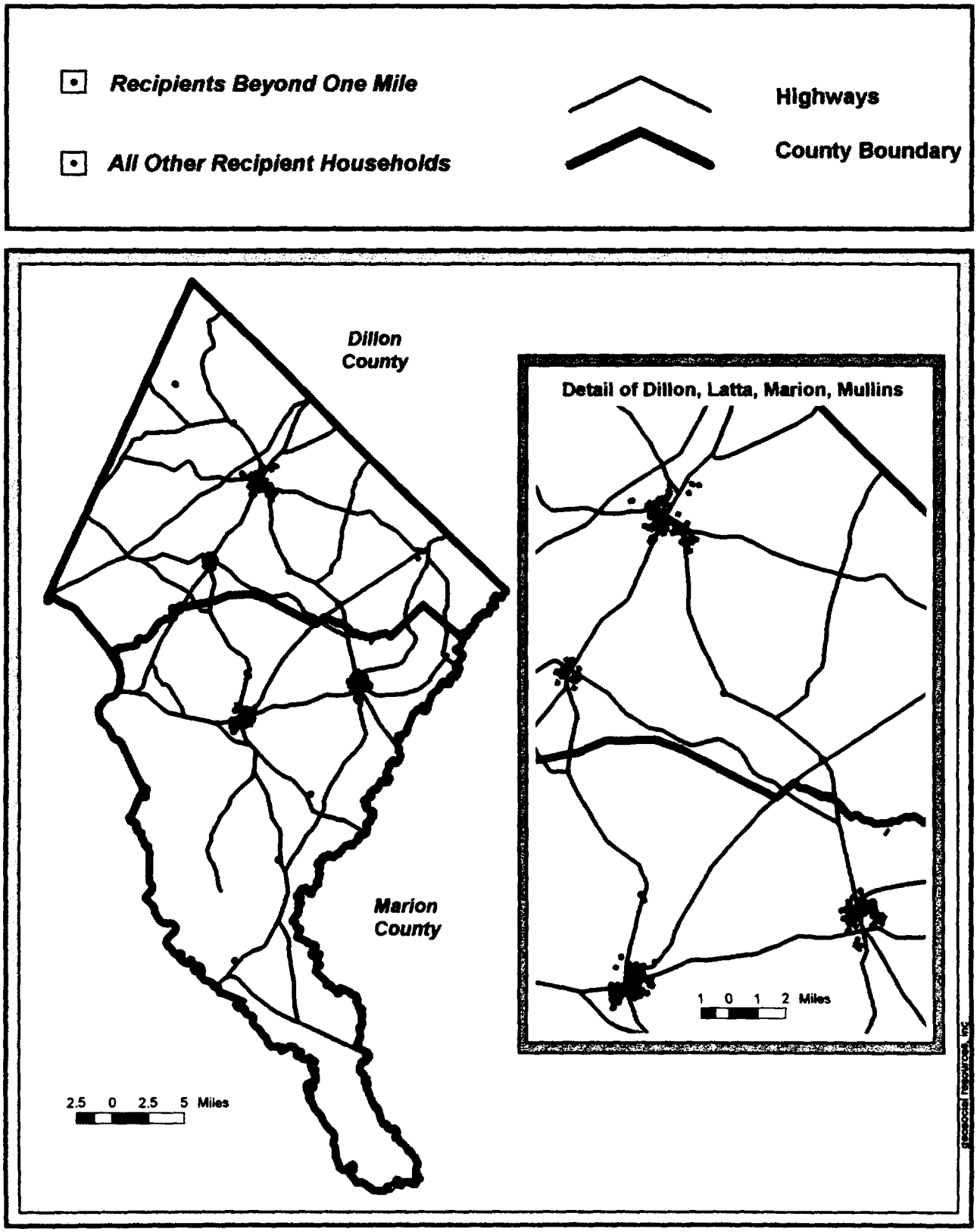
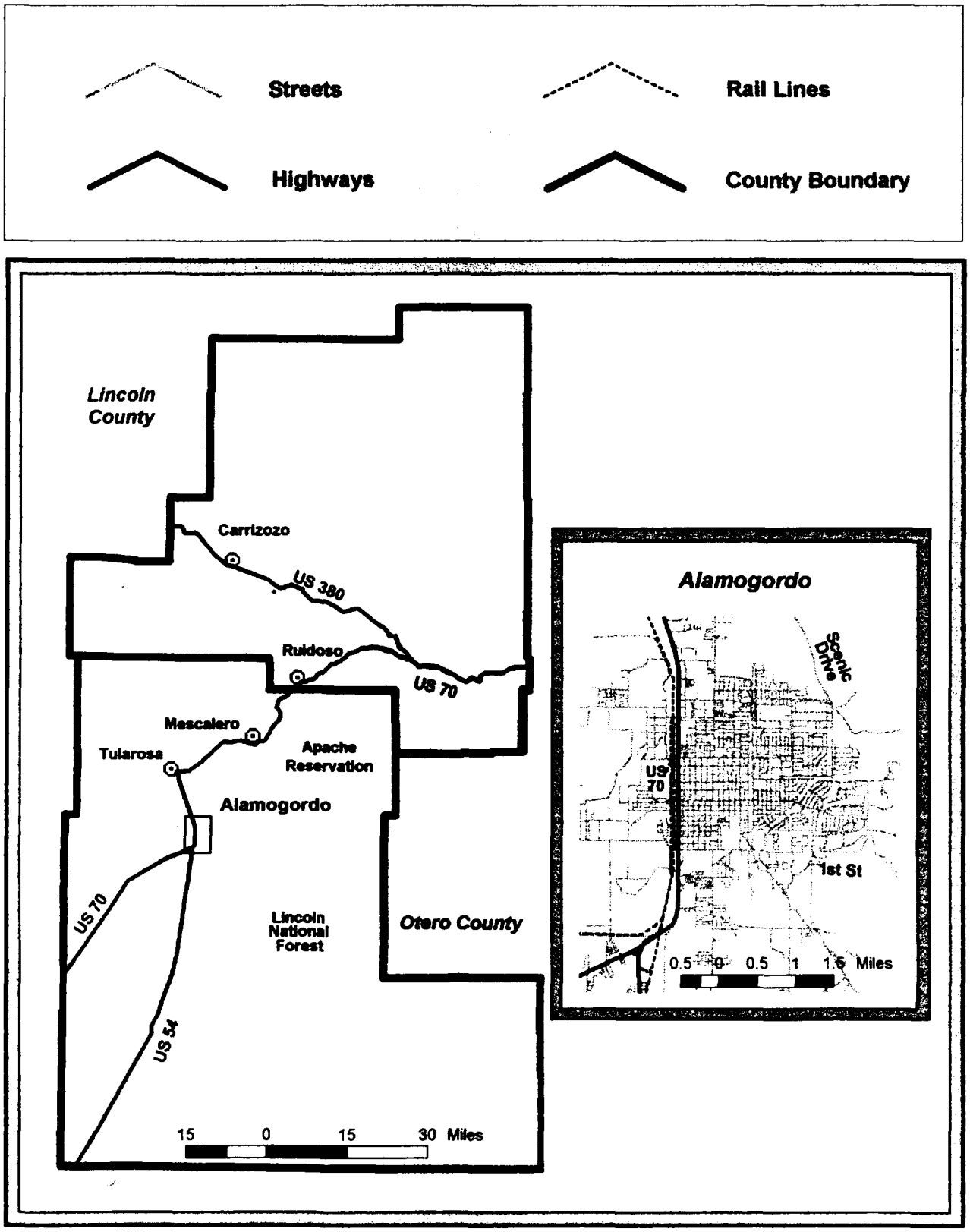


Figure 15. Lincoln and Otero counties, New Mexico, study area, general orientation map



"Reservation households tend to travel to Alamogordo or Ruidoso to do their major shopping."

also draw FSP households from outlying areas. However, the issuances for individuals living within the Mescalero Indian Reservation exceeds redemptions of the two stores on the reservation (Figure 16). The redemption and issuance data suggest that reservation households tend to travel to Alamogordo or Ruidoso to do their major shopping. Finally, the redemptions of authorized food retailers located in the Southern Lincoln Forest area (to the east of Alamogordo) are less than issuances. For the relatively few participant households in this area, access may be somewhat of a problem.

SUMMARY AND CONCLUSIONS

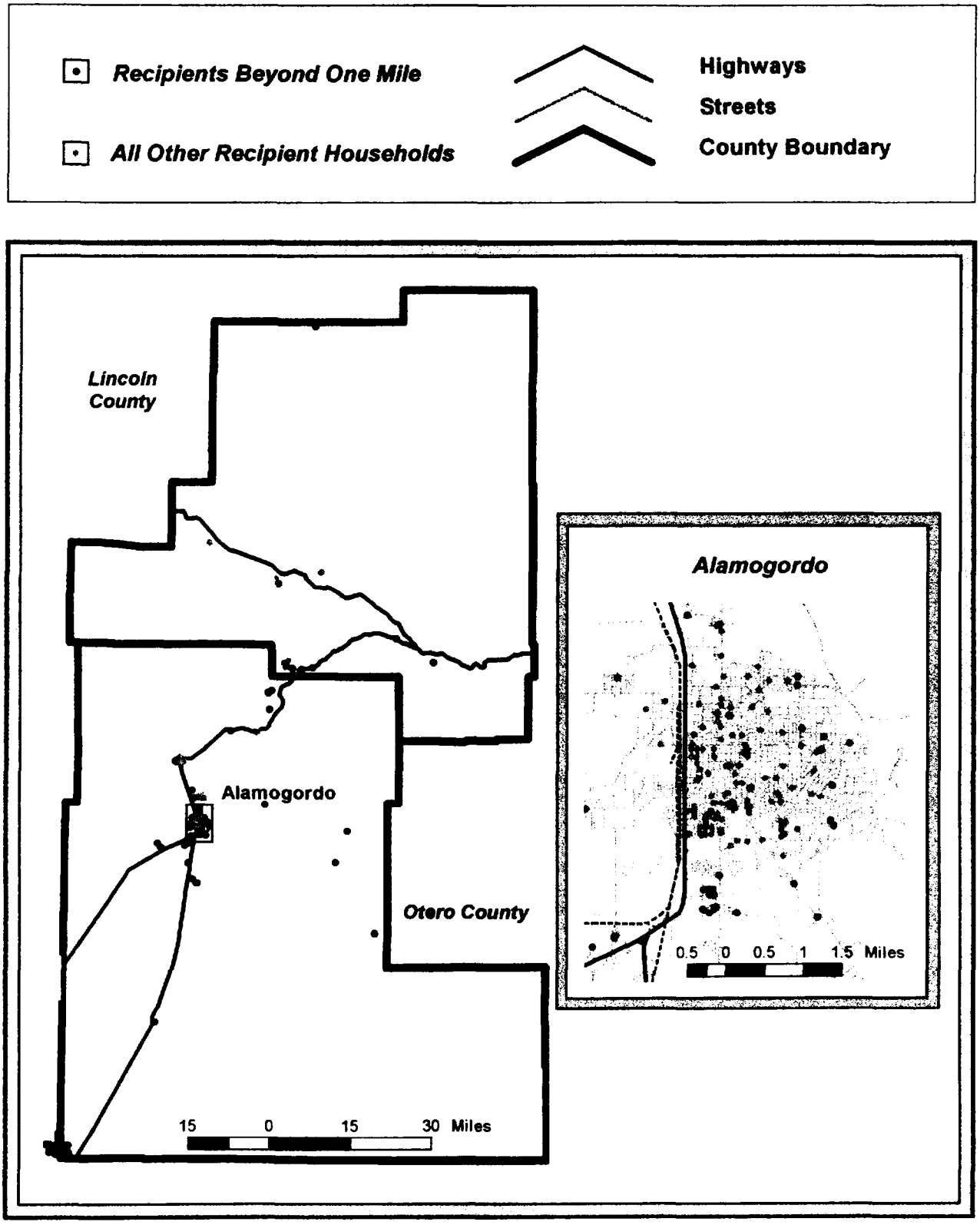
In the eight study areas, a large majority of participants are close to supermarkets and large grocery stores. Most FSP participants in the rural portions of these study areas live in smaller towns or urbanized areas, which have large food retailers.

In the three central city areas we examined, most households receiving food stamps are close to authorized supermarkets and large groceries. In Baltimore, 96 percent live within one-half mile of an authorized large retailer. In Pasadena, 94 percent live within one-half mile of a large retailer. In Southeast Los Angeles, 90 percent are within one-half mile of a large retailer.

In areas characterized as small MSAs, participant households vary in their proximity to authorized retailers. Large numbers of participants live within one mile of a large retailer in most of the major population centers in these three small MSAs. The three areas vary in the extent of their public transportation systems, but none of the more rural areas in these MSAs provides ready access to a supermarket or large grocery for those who do not have use of a car. In areas along the Texas-Mexico border, such as Dona Ana County and Palmdale, rapid growth may pose real problems for establishing and maintaining stores. In Dona Ana County, 22 percent of the population lives in colonias, which lack the necessary water, wastewater, road, and drainage infrastructure to build supermarkets. In Palmdale, low retailer density implies that the population may be growing faster than the ability of retailers to establish stores to meet demand.

In the two highly rural areas we studied, a majority of participants live in the populated centers that have supermarkets or large grocery stores that provide services. In the more remote sections of these areas, roads conditions and the distance to food retailers have some effect on access. There are usually small authorized retailers nearby, but larger stores are farther away.[8]

Figure 16. Lincoln and Otero counties, New Mexico, one-mile access to FSP SM/GS with annual sales over $500,000



Many of the participants who do not live near a supermarket or large grocery are scattered in isolated locations throughout the study areas. However, in all of the eight areas, there are specific locales where participants have no nearby supermarket or large grocery. Such distance may be a serious problem for some households. As expected, distances are greatest for the few individuals in rural areas, for they are generally not serviced by a large retailer.

Finally, in urban and rural areas, analysis of redemptions and issuances indicates that FSP participants often seem to shop in areas other than where they live even if there are large food retailers closer to home. This may reflect either the quality and price of food at the large retailers closest to participants or other factors. Future FCS research will directly address quality, variety, and price of food in authorized stores.

NOTES

1. The Food Stamp Act of 1977, Declaration of Policy.

2. We used an industry definition to define supermarkets as grocery stores that have $2 million or more in gross sales. Large food retailers are those who identify themselves to FCS as a supermarket or a grocery store and have over $500,000 in gross sales. The gross sales cut-off was established to include stores, particularly in rural areas, that could be characterized as a full-line grocery. Site visits and survey data showed that stores with gross sales of more than $500,000 were likely to provide variety across all food lines. In general, almost all rural stores in this category have at least 5 employees, and most have 10 or more employees. In urban areas, most stores of this size have 7 or more employees. This evidence persuaded us to include stores of this size, along with supermarkets, in a category that can meet shopper's basic needs.

3. The Los Angeles County PSU has three sub-areas, and the New Mexico PSU has two.

4. Designation of store type and gross sales was provided by the retailer to FCS at the time of authorization or reauthorization.

5. These numbers are based on ZIP code statistics from the 1990 census supplied by CACI.

6. We collected information on redemptions for stores in a specific ZIP code area and on the food stamps issued to participants within that area. FCS provided information on redemptions by store for the specific ZIP codes within each study area. State agencies provided issuances for food stamp households in the same ZIP codes. These were aggregated by ZIP code to produce the total amount of redemptions and issuances. For each ZIP code, a ratio was established to determine whether redemptions exceeded issuances, thus indicating that the area was drawing food stamps.

7. Colonias are defined as unincorporated subdivisions in which one or more of the following conditions exist: (1) lack of potable water supply or no water system, (2) lack of adequate wastewater system, (3) lack of decent, safe, and sanitary housing, (4) inadequate roads, and (5) inadequate drainage control structures.

8. The larger study of which this paper is a part examined all stores regardless of size. The information from that study shows the presence of smaller stores in each of the areas and assists in interpreting information pertaining to supermarkets and larger stores in this paper.

Table of Contents

Measuring the Dietary Quality of Americans' Food Consumption: The Healthy Eating Index

Eileen Kennedy, James Ohls, Steven Carlson, and Kathryn Fleming

INTRODUCTION AND BACKGROUND

Federal policy on nutrition has recently reflected a sharper focus on the effects of dietary intake on health. Scientific evidence is showing more and more that poor diets are associated with a broad variety of health problems, including cancer, heart disease, and osteoporosis. This evidence has prompted two important developments in public policy: new initiatives designed to ensure that information on healthy eating practices is widely disseminated and (2) the introduction of nutrition education components into various nutrition programs, including the Supplemental Nutrition Program for Women, Infants and Children, and, to a lesser extent, the Food Stamp Program (FSP). The importance of good nutrition on the national agenda is further underscored by the Clinton Administration's appointment of a USDA Undersecretary for Food, Nutrition, and Consumer Services, who has long been an advocate of good nutrition as a cornerstone of better health.

The premise of the work described in this paper is that, given this policy focus on the importance of eating patterns, it is both important and possible to develop simple and direct ways of measuring dietary quality. A broad array of measures have been used in most previous research in this area, including conformance with recommended dietary allowances (RDAs) and consumption levels of various nutrients. The objective of our research was to develop a unidimensional measure of nutritional quality. In doing so, we have drawn upon a substantial amount of previous work in the area (see, for instance, Patterson et al. 1994, Guthrie and Scheer 1981), but we have also extended this work considerably by developing a broader-based measure, or index, and by identifying new solutions to several obstacles to past work. The index we have developed and tabulations based on it are described below.

THE STRUCTURE OF THE INDEX

The Healthy Eating Index has 10 components, which are based on different aspects of a healthy diet. For each component, individuals receive a score ranging from 0 to 10 depending either on the amount of the food component consumed over three days or on the proportion consumed as a percentage of total food energy intake over the same period. Thus, the overall index has a range of 0 to 100. The components are defined as follows:

- Components 1 through 5 measure the degree to which a person's diet conforms to USDA Food Pyramid serving recommendations for five major food groups: grains, vegetables, fruits, dairy, and meats.
- Component 6 is based on *overall fat* consumption as a percentage of total food energy intake.
- Component 7 is based on *saturated fat* consumption as a percentage of total food energy intake.
- Component 8 is based on *cholesterol* intake.
- Component 9 is based on *sodium* intake.
- Component 10 is based on the amount of *variety* in a person's diet.

Components 1–5: Grains and Other Food Groups

The Food Pyramid booklet specifies that adults should eat 6 to 11 servings of grains per day, depending on their overall food energy intake. The booklet also includes a table showing the number of servings recommended at intakes of 1600, 2200, and 2800 kilocalories. (Technical issues concerning how servings are defined are discussed in the next section, Calculating the Index.) In developing the index, we interpolated these serving recommendations to persons with other recommended food energy levels.[1] The interpolation processes are discussed further in the next section. A person who consumes at least the recommended level of servings of grains receives a maximum score of 10 on this component; a person who eats no grains receives 0. The score is calculated proportionately between the extremes. For instance, suppose that Person A has a recommended level of 8 servings. If she or he eats 4 servings, the score for the components is 5 points; if 6 servings are eaten, the score is 7.5 points.

Scores for each of the other four components of the Food Pyramid are calculated in essentially the same way. Servings consumed are compared with servings recommended in the Food Pyramid booklet. However, legumes are treated in a different way in terms of scoring. The Food Pyramid counts legumes as meats or vegetables. When the index scores are calculated, legumes are assigned to the meat group up to the point needed to achieve the maximum meat score. Additional legumes are assigned to the vegetable group.[2]

Component 6: Overall Fat as a Percentage of Food Energy

A score of 10 for the overall fat component means that the intake of fat as a proportion of food energy is less than or equal to .30.[3] The score drops

to 0 when this proportion reaches .45. Between these points, the score is calculated proportionately.

Component 7: Saturated Fat

The score for saturated fat is computed in the same way as the score for total fat. The maximum score is achieved at a ratio of .10, and the zero point is set at .15.

Components 8 and 9: Cholesterol and Sodium

The scores for cholesterol and sodium are based on milligrams consumed. A score of 10 for cholesterol and sodium corresponds to 300 and 400 milligrams, respectively. A score of zero corresponds to 450 and 4,800 milligrams. Intake between these high and low levels is scored proportionately.

Component 10: Variety

The importance of variety in diets is stressed in the Food Pyramid. In the Healthy Eating Index, variety is measured by counting the total number of *different* foods eaten that contribute substantially to meeting one or more of the five food group requirements. In practical terms, this means that foods are counted only if enough is eaten to contribute at least half of a serving to one of the five food groups.[4] Foods that are very similar, such as different forms of potatoes or different forms of white bread, are grouped together and counted once in measuring variety. However, "mixtures" are broken down into their parts so that a single food item could contribute two or more points to the variety score. For example, beef stew could contribute as a meat and a vegetable. The allocation of components in a mixture is described in the section, Calculating the Index.

Once the total number of separate foods eaten is computed, the variety score is calculated as the other index components are. Based on parameters developed on the basis of preliminary tabulations of the data, a maximum score of 10 points on the variety component is given if, over the three-day period, he or she eats substantial amounts (at least half-servings) of 16 different foods.[5] A score of zero is given for six foods or less.[6]

CALCULATING THE INDEX: DATA AND METHODS

Estimates of dietary pattern to which the Healthy Eating Index is applied are based on the 1989 and 1990 Continuing Survey of Food Intakes by Individuals (CSFII) databases. Three days of 24-hour dietary intake data are available for most individuals in the database. First-day data were collected during an in-person interview, and second- and third-day data were collected from food diaries. In addition to the dietary intake information, the CSFII databases contain extensive information about personal and socioeconomic characteristics, as well as knowledge of and attitudes toward healthy eating practices.

The focus of most research involving the Healthy Eating Index to date is persons age 2 and older who are not pregnant or lactating. Because the unique nutritional needs and eating patterns of infants and of women who are pregnant or breastfeeding are not fully addressed in the Food Pyramid recommendations, we have excluded these individuals from the current analysis.

The overall development of the index depends on several technical issues. The methods for determining portion sizes and the methods for allocating mixtures to individual food groups are critical. Methods for calculating serving requirements by age and gender, and for grouping foods in order to measure variety, were also carefully considered, along with two alternative methodologies for constructing the index.

Portion Sizes

The first five components of the index are based on recommended numbers of servings by food group. To compute the index, it is therefore necessary to determine the quantities of the various foods that will be counted as servings. Our objective in setting serving sizes was to be as consistent as possible with the Food Pyramid booklet, which documents serving amounts for about 50 foods. For instance, one slice of bread, one-half cup of cooked pasta, one whole medium apple, one cup of milk, and 2.5 ounces of lean meat are designated as single servings in the booklet. However, the CSFII database used to calculate the index includes more than 4,000 different foods, as denoted by the seven-digit USDA coding system. We therefore developed procedures for generalizing from the information in the Food Pyramid booklet on serving sizes to create serving-size algorithms that are applicable to the full range of possible foods.

The approach used to convert quantities of food measured in grams in the CSFII database to numbers of servings is based on a database developed by Technical Assessment Systems, Inc. (TAS) (Kennedy et al. 1994). This database breaks down each food as defined by the seven-digit USDA codes into a set of three-digit constituent commodity codes.[7] For instance, bread made with flour, eggs, and milk is broken down into flour, eggs, and the several constituents of milk, including nonfat milk solids and milk fat. A fruit salad is broken down into its constituent fruits. This approach to setting serving sizes for computing scores in the Healthy Diet Index is to create consistency across various foods in a food group because it is based on the amounts of key underlying commodities in foods.[8] This means, for instance, that a wheat product is treated consistently regardless of whether the wheat is the main ingredient (e.g., bread) or a subsidiary component (e.g., the flour in a white sauce). In the text that follows, we

explain how serving sizes are computed for each of the food groups. A complete description of the methods used in determining serving amounts is presented in Kennedy et al. (1994).

Grains. Serving amounts for breads and rolls were determined according to an "equivalent flour" approach. On the basis of an analysis of several breads, it was estimated that a typical slice of bread (which the Food Pyramid booklet designates as one serving) contains 15.2 grams of flour. Therefore, any other form of bread is converted to servings on the basis of the number of grams of flour it contains (according to the TAS database) divided by 15.2. For instance, if the TAS database indicates that a certain kind of large roll has 30 grams of flour, that roll is counted as approximately two bread servings. The equivalent flour approach is a convenient way to estimate the extent to which many different kinds of bread made with different proportions of nongrain ingredients contribute to the grains food group.

"We developed procedures for generalizing from the information in the Food Pyramid booklet on serving sizes to create serving-size algorithms that are applicable to the full range of possible foods."

Serving amounts for pasta are similarly determined. The Food Pyramid states that one-half cup of cooked pasta constitutes one serving. This amount is estimated to contain 25 grams of flour, and this numerical factor is used to convert all types of pasta to serving amounts.

Serving sizes of grains in ready-to-eat cereals are treated in a similar way. It is assumed that the standard serving size in the Food Pyramid booklet for these products, one ounce, contains 28 grams of the underlying cereal commodities.

Vegetables. The Food Pyramid booklet specifies that one-half cup of most cooked vegetables, one cup of most raw leafy vegetables, and one-half cup of most raw nonleafy chopped vegetables should each be counted as a single serving. However, because different vegetables have different densities, the weight in grams for the same measure could differ from one vegetable to the next. Therefore, serving amounts for vegetables were estimated according to the weight of a cup or one-half cup of that food. For instance, one-half cup of cooked corn weighs 85 grams, 77 grams of which are corn. Therefore, to estimate serving amounts, the number of grams of corn a person eats is divided by 77.

Fruits, Dairy, and Meats. A similar commodity-based approach was used to establish serving sizes for fruits, dairy products, and meats. These procedures are described in Kennedy et al. (1994).

Dealing with "Mixtures" in Computing Food Group Scores

The appropriate amount of each food in a mixture must be assigned to its food group, since the scoring system is based on component foods. Pizza,

for instance, may make significant contributions to several different food groups, including grains, vegetables, dairy, and meat.

The approach used to allocate the parts of a mixture to food groups is a straightforward extension of the approach for estimating portion sizes. The TAS database is used to determine the underlying commodities for each relevant seven-digit USDA food. These commodities are then assigned to the food groups according to the serving-size algorithms described in the previous section. For example, part of a pizza is assigned to the bread group according to the weight of the flour in the crust; part is assigned to the vegetable group according to the weight of the tomato sauce; and part is assigned to the dairy group according to the weight of the four milk commodities in the cheese. Any meat on the pizza is assigned to the meat group, using the commodity code weights. Analogous procedures are used for other mixtures.

Calculating Serving Requirements by Age and Gender

Because nutrition requirements vary substantially by age and gender, the serving requirements that form the basis for index scores must also be congruent with age and gender. We calculated serving requirements using information in the Food Pyramid booklet that links numbers of recommended servings in various food categories to overall caloric requirements. In particular, a table in the booklet provides servings guidelines by food group for each three food energy levels. Extrapolation and interpolation were used to extend these guidelines to groups with other recommended food energy levels as well. This work is described in detail in Kennedy et al. (1994).

Grouping Foods to Measure Variety

The USDA coding structure, which forms the basis of the food coding used to compute the Healthy Eating Index, is highly detailed. More than 4,000 food codes are used in the 1989 and 1990 CSFII data files, and many similar items have different codes. For instance, white bread and rolls made from white flour are two separate codes, as do several different forms of white potatoes, and whole milk and 2 percent milk. Many different cuts of beef each have their own code.

The measure of variety for the index was derived by grouping similar foods and aggregating the more than 4,000 food codes from the two files into approximately 350 codes. Foods were grouped and coded according to the following criteria:

- Foods made from different commodities (i.e., derived from different animals or different plants) were grouped separately.

- Foods made from the same commodities but differing substantially in form were grouped separately. For instance, orange juice is grouped separately from whole oranges, which contain much more fiber.

- In general, foods that differ only in fat content were grouped together. For instance, green beans with butter and green beans without butter are grouped together.

- Each kind of vegetable was given a different code, but all forms of the same vegetable were generally given the same code.

- Different forms of the same meat were generally given the same code. Some exceptions were made, however. For instance, different organ meats were given different codes and ham was coded separately from pork.

- Each type of fish was given a different code, but different forms of the same fish received the same code.

- Most forms of liquid milk were given the same code, which was also assigned to ice cream. However, pudding has a different code, reflecting its grain content.

- Most cheeses, except cottage cheese, have the same code.

- In general, all white bread made from wheat, including bagels and pita bread, received the same code. However, sweet rolls and pasta were each given a different code.

- Whole wheat products were coded differently from products made with refined wheat flour.

- Ready-to-eat cereals made principally from the same grain received the same codes; those made from different grains received different codes.

Complete information on the groupings is included in Kennedy et al. (1994).

Assessing variety also requires mixtures to be broken down into their constituents by food code before the variety index is calculated.[9] For instance, a lasagna may contribute significant amounts of pasta and meat, and should thus be counted as yielding two "points" to the variety score

(unless, of course, the person has already eaten one or both of these foods at different times during the observation period).

Alternatives Considered and Rejected

Two alternative methodologies were considered for constructing the index. Although they were not used, they provide additional insight into the structure of the index and how it is interpreted.

Whether to Count Small Amounts of Contributions to Food Groups. Many foods clearly fall principally within one food group but contain some amounts of other foods. For instance, bread is mainly a grain food, but it may contain small amounts of dairy and egg (meat) products. The issue here is whether, in computing scores on the first five components of the Healthy Eating Index, to assign bread *solely* to the grain group or to recognize its contributions to other food groups as well. One could argue for the former on the basis of the Food Pyramid booklet, in which the examples of foods are generally assumed to be in one group only. Furthermore, once a cutoff level as to the minimum amounts of commodity that would be counted was established, this would be relatively easy to implement. However, it was decided for two reasons to count all contributions to various food groups without imposing a minimum size cutoff. First, even relatively small amounts of incidental foods contribute to an individual's overall nutritional status. Second, disregarding the "incidental" components of foods would involve often arbitrary judgments about where to draw the line for what is incidental. There appears to be no clear way to distinguish between foods like bread, which are mainly in one food group, and true "mixtures" like lasagna, which contribute substantially to several food groups.

The decision to count small amounts of contributions to food groups has a number of implications. First, the nutrition value from condiments, such as ketchup, is counted in the index, though the small amounts of condiments that are actually used usually make them unimportant to the overall index value that is computed. Second, the nutrition value of the milk in some sweets, such as milk chocolate bars, is counted in the dairy group even though the overall food would, if allocated to one group, be allocated to the "sweets" group, which is not counted in the index. Similarly, the fruit juice in a soft drink that is 10 percent fruit juice and the potato content of potato chips are both counted in computing the index, though the water and sugar in the soft drink and the fat content of the potato chips are not counted when computing the first five components of the index.[10] (As noted, relatively small components of foods are generally not counted in calculating the variety score.)

Whether to Include a Component Reflecting the Intake of Food Energy. The early development work for the index focused, in part, on whether to include a component that would be related to food energy consumption in light of the fact that obesity is a significant public health problem in the United States. Two possibilities were considered: (1) measures of appropriate body weight, such as a body mass index score or conformance to standard weight-for-height tables and (2) a measure of food energy intake in relation to the relevant RDA.

It was decided that neither approach was satisfactory, and no component of this type was included in the index. The physical indicators were rejected on the grounds that they were not direct measures of diets and were significantly influenced by other factors, such as levels of physical activity, unrelated to eating patterns. Therefore, a component based on these measures would not have been parallel to the other parts of the index. A measure based on food energy in relation to the RDA was rejected because it was found, during preliminary tabulations of the data, not to be highly correlated with physical measures of obesity.

RESEARCH FINDINGS

This section presents preliminary tabulations and other analyses conducted with the index. All tabulations include only CSFII sample observations for which three days of intake data are available. Tabulations are weighted to represent the overall U.S. population.

Average Overall Scores

The average score on the Healthy Eating Index for the 1989 CSFII was 63.9 out of a possible 100 points (Table 1). Approximately 11 percent of

Table 1. Distribution of Persons by Levels of the Healthy Eating Index

Level of Index	1989	1990
< 30	*	*
30-39	2 %	3 %
40-49	11 %	12 %
50-59	26 %	23 %
60-69	28 %	29 %
70-79	22 %	21 %
80-89	10 %	10 %
≥ 90	1 %	2 %
Mean	63.9	64.0
Sample Size	**3,997**	**3,466**

Source: Data from CSFII, U.S. Department of Agriculture, 1989 and 1990 weighted data; ages 2+; 3-day data.

* Less than .5 percent.

respondents scored 80 or above, while 13 percent scored below 50. The remaining observations are quite evenly distributed among the different deciles in the range of 51 through 80. The scores are quite similar for the 1989 and 1990 data sets. Because of this, it is possible that they are a result of statistical sampling error.

Component Scores

Average scores for components of the index vary significantly (Table 2). The lowest mean score is for fruits: the average is 4.0. Scores for the vegetables and the saturated fat component are also relatively low. Scores are relatively high for the cholesterol (8.5) and meat components (7.5).

Correlation with RDAs Attained

An important criterion for assessing the usefulness of the Healthy Eating Index is the degree to which it is correlated with other conventional measures of diet. As shown in the first five columns of Table 3, the likelihood of people meeting at least 75 percent of their RDAs for most nutrients rises substantially with higher index scores.[11] For example, among individuals scoring less than 50 on the index, only 47 percent attained 75 percent of their RDA of vitamin C (Table 3, Row 6).

However, this percentage rises to about 91 percent for individuals scoring between 70 and 79 on the index and to nearly 99 percent for those scoring 80 or above. The relationship between scores and most other nutrients in the table is similar.

Table 2. Levels of Components of the Healthy Eating Index

Component	Mean	Percent Observations at Score = 0	Percent Observations at Score = 10
Grains	6.2	0.1	11.1
Vegetables	6.1	0.8	17.1
Fruits	4.0	13.2	13.6
Dairy	6.7	0.2	32.5
Meat[a]	7.5	0.1	32.2
Total fat	6.3	5.0	20.3
Saturated fat	5.1	18.7	19.5
Cholesterol	8.0	10.8	69.1
Sodium	7.0	9.6	36.2
Variety	7.0	2.8	32.9
Total[b]	63.9	—	—
Sample Size	**7,463**	**7,463**	**7,463**

Source: Data from CSFII, U.S. Department of Agriculture, pooled 1989 and 1990 weighted data; ages 2+; 3-day data.

[a]Includes eggs, nuts, and some legumes.
[b]Components may not add to total due to rounding.

Table 3. Percent Observations Meeting 75 Percent of RDA by Healthy Eating Index Levels

Nutrient	Index Score					Correlation Coefficient of Index with Consumption
	0-49	50-59	60-69	70-79	≥ 80	
Food energy	33.4	47.2	50.8	57.1	66.1	.21
Protein	81.5	90.8	94.6	98.0	99.6	.20
Vitamin A - IU[a]	35.4	54.2	66.4	82.3	91.8	.31
Vitamin A - RE[b]	32.4	51.2	61.7	76.6	88.7	.29
Vitamin E	32.3	45.0	47.0	49.2	61.7	.15
Vitamin C	47.0	65.6	81.6	90.7	98.6	.42
Thiamin	60.8	80.9	90.7	96.2	98.4	.35
Riboflavin	69.5	81.8	85.4	93.3	97.7	.27
Niacin	70.5	86.0	94.0	97.4	99.1	.33
Vitamin B6	32.4	52.7	65.7	84.0	94.0	.40
Folate	54.9	75.0	85.2	94.5	98.9	.40
Vitamin B12	85.5	93.0	93.6	95.4	97.9	.06
Calcium	38.6	50.2	52.9	63.8	72.1	.15
Phosphorous	71.9	83.8	90.1	95.6	98.6	.14
Magnesium	29.0	46.0	55.9	71.9	89.5	.40
Iron	54.5	66.6	75.5	84.2	90.0	.21
Zinc	39.6	47.3	45.7	52.6	53.8	.06
Sample Size						**7,463**

Source: Data from CSFII, U.S. Department of Agriculture, pooled 1989 and 1990 weighted data; ages 2+; 3-day data.

[a]International units.
[b]Retinol equivalents.

The statistical relationship between the index scores and nutrient intake levels is also confirmed by the correlation coefficients presented in the last column of Table 3. For each nutrient, there is a positive association between intake and the index score, and these correlations range up to approximately .40 for magnesium, vitamin C, vitamin B6, and folate.

Differences by Person and Household Characteristics

Index scores varied modestly by person and household characteristics (Table 4). Females tend to score higher than males. The difference in means is more than 3 points. When the index is cross-tabulated with age, there is a bimodal pattern. The young and the old tend to score above the overall mean, while persons in the 15- to 39-year-old bracket score the lowest. Persons in households headed by a single male tend to score substantially lower on the index than do persons in households headed by a single female or two people. People with higher levels of education tend to have higher scores than those with less education. Index scores for persons in households below the poverty level are substantially lower than the national mean.

Descriptive Regression Analysis

To further explore the associations between the index and various socioeconomic characteristics, we ran a descriptive regression to

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Table 5. Regression Results (Healthy Eating Indexed Regressed on Household Characteristics)

Variable[a]	Parameter Estimate	Standard Error[b]
Intercept	51.2	.98
Female	2.8	.30
Age		
2-4	8.7	.88
5-14	4.5	.76
15-39	-2.5	.38
65+	6.2	.47
(Omitted category: 40-64)		
Race		
Black	-1.4	.46
Asian	5.6	1.20
Other race	-1.8	.77
Hispanic	1.7	.52
(Omitted category: white)		
Household head		
Two heads	2.5	.72
Single female head	2.0	.69
(Omitted category: single male head)		
Education		
High school graduate	1.9	.70
College graduate	4.6	.60
Postcollege education	6.2	.57
(Omitted category: no high school diploma)		
Percent poverty level		
<50%	0.88	.55
131-200%	0.32	.43
201-300%	1.50	.45
301%+	2.30	.43
(Omitted category: 51-130%)		
Special Diet		
Vegetarian	1.0	.99
Other	3.4	.43
Exercise		
Heavy	1.8	.55
Moderate	1.5	.35
Flag for missing exercise data	1.0	.65
(Omitted category: does no exercise)		
Household size		
1	1.5	.72
2	0.5	.47
(Omitted category: 3+)		
No children	1.1	.50
Census divisions		
New England	2.8	.72
Mid-Atlantic	2.8	.58
Eastern North Central	1.4	.54
Western North Central	0.5	.70
South Atlantic	1.4	.53
East South Central	-1.3	.69
Pacific	2.5	.57
Mountain	2.4	.66
(Omitted category: West South Central)		
Urban	.35	.33
Not metropolitan area	.19	.35
(Omitted category: suburban)		
Mean of Dependent Variable	**63.80**	
R squared	**0.18**	

[a]All variables are binary (1,0) indicators of the standard characteristic.
[b]Standard errors do not account for clustered sample design and may be understated.

People with income above 200 percent of poverty scored significantly higher than those with lower incomes, and an income above 300 percent of poverty was associated with even higher scores. Oddly enough, our regression seems to show that people in the lowest income range, 0 to 50 percent of poverty, have higher index scores than those in the 51- to 200-percent range. However, these results are not statistically significant.

Higher levels of education were consistently associated with higher scores. People with postcollege education, the highest level, tended to score seven points higher on the index than people without a high school diploma.

Several family composition variables were significantly correlated with index scores. Persons living in two-parent families and in families headed by females had higher scores than persons in families headed by a male. Persons living alone in families without children scored higher than their counterparts.

Behavior variables also affected index scores. Vegetarians and people on special diets scored higher than people on nonrestricted diets. People who exercise heavily had the highest scores, followed by those who exercise moderately.

Since the CSFII is stratified by Census region and degree of urbanization, we included these variables in the regression to partly control for design effects. Although some of these variables are not significant, the pattern of estimated coefficients suggests that persons living in the central and southern states scored significantly lower than those living on either coast.

CONCLUSIONS

We view the research reported in this paper as a continuing effort, which can be advanced with further research in at least two different directions. First, we hope that it will be possible to improve and refine the Healthy Eating Index as a way of measuring average food consumption by groups of individuals. This line of research would, for instance, improve our ability to monitor changes in overall nutrition over time and also to measure the effects of specific policy interventions, such as new nutrition education programs.

Second, new research could focus more on intake at the individual level and on the development of a version of the Healthy Eating Index that could be used as a relatively simple assessment tool, which would not require access to large computer databases. Such a tool might be useful in program administration and in giving people a simple means of evaluating their diet.

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NOTES

1. For children with food energy RDA below 1,600, the minimum number of servings of grains was kept at 6, but the serving sizes were scaled down proportionately on the basis of RDA requirements. For adult males with food energy RDA above 2,800, the required serving number was set at 11.

2. Soy products are the exception. Usually used as meat substitutes, they are always assigned to the meat group.

3. For total fat, saturated fat, cholesterol, and sodium, the maximum number of points used in computing the index scores were based on recommendations summarized in (USDA 1992). The levels at which zero points were assigned for each of these variables were based on what a group of nutritionists judged to be a relatively high level of intake. For the three fats criteria, the "zero points" levels were set at a level 50 percent higher than the

recommended maximums. For sodium, the "zero point" level was set at twice the recommended maximum.

4. Identical food items eaten on separate occasions were aggregated before imposing the half-serving cutoff. For instance, if a person drank one third portion of milk at breakfast and another one third portion at supper, the milk would be counted toward the variety index, since the sum of the milk servings exceeded one half, even though each individual serving was less.

5. Additional details on the types of foods considered in determining the variety score appear in the section on data and methods. The 16-food cutoff point was determined on the basis of the eating patterns represented in the dataset—rather than biological evidence, since there is little known about the extent to which variety is beneficial. The data show that nontrivial numbers of people appear to consume 16 different foods over three days, and that this number also discriminates between individuals with differing degrees of variety in their intake.

6. This variety score must be calibrated in a different way if one, rather than three, days of food intake data are used, since the number of different foods eaten in a day is substantially less than for three days. On the basis of data tabulations of one-day intakes, it appears that the one-day parameter, which is roughly equivalent to the three-day parameters in the text, is to assign a maximum score for eating substantial amounts of eight foods in a given a day.

7. A commodity is defined as a raw agricultural product such as string beans or carrots or beef.

8. Because of limited resources, baby foods were not coded into food groups. Baby foods occur only infrequently in the sample of persons age 2 and older used in the analysis reported in the paper.

9. In order to make the task of disaggregating foods manageable within the available time and resources, only component foods which were present in mixtures in substantial quantities were included in the variety calculations. Details of how this principle was implemented are provided in (Kennedy et al. 1994).

10. The fat content of potato chips is, of course, counted in computing the components of the index pertaining to fat.

11. Seventy-five percent of the RDA is chosen as a criterion because the RDA are set in such a way that they are higher than most people need. Index tabulations have also been performed using a 100 percent criterion, and the results are essentially the same as those reported in the text for 75 percent.

12. The regressions are descriptive in that they were not intended to model causality but to provide a means for examining associations between sets of variables in the analysis. It is noteworthy that standard errors may be understated because they do not account for the clustered sample design of the underlying survey.

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Measuring Food Security in the United States: A Supplement to the CPS

Gary Bickel, Margaret Andrews, and Bruce Klein[1]

INTRODUCTION

Since 1992, the Food and Consumer Service (FCS) of the U.S. Department of Agriculture (USDA) has worked to develop a national measure for poverty-linked food insecurity and hunger in the United States.[2] Estimates of the number of Americans experiencing hunger because of resource constraint—that is, because they cannot afford enough food—have differed widely, and there has been no widely accepted, authoritative measure of hunger of this kind.[3] While significant progress was made in the latter half of the 1980s toward a scientific basis for defining and measuring food security and hunger, issues concerning measurement for the full population were not adequately addressed and adequate national data were not available.[4] Moreover, consensus had only recently emerged within the scholarly community that an accurate understanding and measurement of resource-constrained or poverty-linked hunger comes primarily by viewing hunger in the broader setting of the "food insecurity" of the household. In response to these issues, FCS both sponsored a major national survey to provide the data needed to measure food insecurity and hunger, and developed an analytic design for doing so. The survey instrument was developed with assistance from leading technical experts in the field who met at a conference in January 1994 and with the participation of a large federal interagency working group.[5] The new survey was conducted in April 1995 by the U. S. Bureau of the Census as a supplement to the Current Population Survey (CPS).

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On the basis of the new survey data, USDA is now developing the first direct, comprehensive national estimates of the prevalence and severity of poverty-linked food insecurity and hunger in the United States. Consistent and reliable measures of these conditions will be a valuable tool for administrators and policymakers. These measures can help to identify those segments of the population most in need, to assess the impacts of economic conditions and public programs, and to monitor the success of efforts to reduce poverty-linked hunger. In addition, the new measures and the CPS data set from which they are drawn will be a valuable resource for research into the causes and consequences of resource-constrained hunger and food insecurity, and in particular, through linkage with other data, into the relationship of poverty-linked hunger to malnutrition and health problems.

This paper describes the measurement concepts and questionnaire design. The first section reviews the recent research on hunger measurement and the convergence within the scholarly community on the definitions of food security and hunger that guided our work. The second section describes our synthesis of previous research and our clarification of the measurement objectives for the current effort. The third and fourth sections briefly describe the development of the CPS Supplement survey instrument, the data collection effort, and FCS' plans for analyzing and reporting the results from the April 1995 survey. The final section offers a brief summary and conclusion.

BACKGROUND OF U.S. FOOD SECURITY AND HUNGER MEASUREMENT

The federal government's interest in measuring food security and hunger can be traced from 1975, when a basic question on household food sufficiency was developed for use in the USDA Nationwide Food Consumption Survey of 1977–78.[6] This question has been included in every subsequent USDA national food-use survey. The question itself or a modified version of it has now been asked in at least 12 national surveys spanning nearly 20 years.

Efforts to measure hunger from survey data became widespread in the early 1980s among local public and private agencies and advocacy groups, accelerating with the deep recession and growing poverty levels of that period.[7] The quality of these efforts was at first highly uneven. Sampling and survey methods were often inadequate, and there was no common understanding of what the phenomenon was to be measured. Definitions of hunger spanned a wide range of medical, experiential, and social concepts.

The 1984 *Report of the President's Task Force on Food Assistance* reinforced the urgency and legitimacy of these efforts, officially endorsing the need to define hunger in terms of its social meaning as well as its traditional medical/clinical meaning. The report characterized the medical definition of hunger as "the . . . physiological effects of extended nutritional deprivation," while defining the personal and social meaning as "a situation in which someone cannot obtain an adequate amount of food, even if the shortage is not prolonged enough to cause health problems." The task force noted the relevance of this alternative definition to serious social policy concerns[8] but emphasized that no reliable direct measure of hunger in this sense then existed.

The task force also examined the relationship between hunger and poverty, noting the close relationship between hunger in its social meaning and poverty. However, the report emphasized that the two are not identical, in effect dismissing the indirect approach to estimating hunger prevalence,

which is based on extrapolation from income poverty data and other indirect indicators.[9] The task force found no accepted, reliable measures of hunger, either direct or indirect, thus helping to make clear the need to develop them.

At the federal level, the next important development in hunger measurement began in 1985 with planning at the National Center for Health Statistics (NCHS) for the third National Health and Nutrition Examination Survey (NHANES III). The quantitative component of the USDA food-sufficiency question was included,[10] as were items based on indicators of hunger adapted from those developed by Wehler (Woteki, et al. 1990; Briefel and Woteki 1992). Variants of these questions subsequently made their way into the Extended Measures of Well-Being Module of the Census Bureau's Survey of Income and Program Participation (SIPP) and into several surveys conducted in 1992-1994 for studies of the FSP by Abt Associates (Davis and Werner 1993, Beecroft et al. 1994), Mathematica Policy Research (Fraker et al. 1992, Ohls et al. 1992), and The Urban Institute (Cohen and Young 1993).

While these government-sponsored survey efforts were encouraging, they were neither closely coordinated nor based on a common conceptual framework that would have allowed them to provide a widely accepted measure of hunger in its social meaning. However, work in the private sector since the mid-1980s did, in fact, approach this goal.

"These [research] efforts resulted in methodologically sophisticated, empirically grounded measurement scales for hunger . . . based on social survey data."

Two sustained, independent research efforts in particular provided the scientific basis for the direct household-level measurement of food insecurity and hunger in the social meaning. The first is the work of Wehler and colleagues beginning with the 1983 Massachusetts Nutrition Survey and the 1985 New Haven Risk Factor Study, the initial pilot study of the Community Childhood Hunger Identification Project, or CCHIP (Wehler 1986; Wehler et al. 1991, 1992, 1995). The other is the work of Radimer and colleagues in the Cornell University Division of Nutritional Sciences, which includes Radimer's 1990 doctoral dissertation and the subsequent continuing work at Cornell to develop and extend this approach (Radimer 1990, Radimer et al. 1990, Campbell 1991, Radimer et al. 1992, Kendall et al. 1994, Olson et al. 1995). Both these efforts resulted in methodologically sophisticated, empirically grounded measurement scales for hunger and near-hunger conditions based on social survey data. Although the approaches of the two teams differed slightly in formal conceptual basis and in survey "style," both teams used the same statistical methodology and demonstrated independently that hunger in the social sense can be operationally defined and measured in this way. This

work further showed that hunger is best understood and measured in terms of the broader setting of efforts within the household to cope with insufficient food and food budgets, and to manage scarce food resources through a regular sequence of observable behaviors and conditions as the severity of food insufficiency for the household increases.

Meanwhile, in the public sector, Basiotis (1992) applied economic analytic methods to national data on household food consumption and self-reported food sufficiency, validating the scaled measurement approach to food insecurity in another, entirely independent way. This work confirmed the presence of a clear sequence of household economizing behaviors in managing increasingly scarce food resources: households first sacrifice food (and dietary) quality by substituting cheaper and cheaper foods, and only subsequently reduce food quantity.[11]

"Hunger was coming to be viewed within the broader context of food security, defined . . . as "secure access at all times to sufficient food for a healthy life."

While the basic methodology was being established for measuring hunger and near-hunger conditions within U.S. households (roughly 1985–1990), a shift in perception also was occurring within the scholarly community, in which hunger was coming to be viewed within the broader context of the "food security" of the household.[12] The concept of food security—defined succinctly by Maxwell and Frankenberger (1992) as "secure access at all times to sufficient food for a healthy life"—had emerged within the economic development literature of the 1960s and 1970s. Initially, the concept was focused on food-supply issues at the regional, national, or even global level. By the 1980s, however, it was applied increasingly at the household level in the international literature on hunger problems,[13] paralleling the interest that was developing in applying the concept in this same way in U.S. studies of hunger.

Following the 1987 Berkeley Conference on Hunger Measurement (Margen and Neuhauser 1987), a definition of food security for the U.S. was presented in testimony before the U.S. House of Representatives, Select Committee on Hunger. This definition, adapted from the World Bank (1986), was widely supported among participants at the Berkeley conference and in a post-conference working group (Margen and Neuhauser 1989). An Urban Institute team (Cohen and Burt 1989, Cohen 1990) called for the development of a "food security policy" as part of a privately funded project to develop recommendations to address the hunger problem in the United States. As noted by Campbell (1991), this activity reflected an emerging consensus within the U.S. scholarly community that the broad set of conditions that had loosely been referred to as hunger in the 1980s was now being discussed as "food insecurity."

The definition of food security/insecurity was given authoritative form in 1990 by one of the expert panels convened by the Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology, as part of its major report, *Core Indicators of Nutritional State for Difficult-to-Sample Populations* (LSRO 1990). This report precisely defined food security and insecurity in the U.S. context as well as the relationships among food insecurity, hunger, and malnutrition:

- ***Food security*** was defined by the Expert Panel as access by all people at all times to enough food for an active, healthy life and includes at a minimum: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, and other coping strategies).

- ***Food insecurity*** exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.

- ***Hunger***, in its meaning of the uneasy or painful sensation caused by a lack of food, is in this definition a potential, although not necessary, consequence of food insecurity. Malnutrition is also a potential, although not necessary, consequence of food insecurity.

The LSRO definitions are consistent with the sequence of household food conditions and behaviors revealed in the earlier efforts to measure hunger. In recent analyses of CCHIP data on household strategies for coping with food insufficiency, researchers have explored the relationship between levels of food insecurity short of actual hunger and the more severe levels characterized by actual hunger (Anderson et al. 1995, Scott et al. 1995). The emphasis throughout the Cornell work on a "managed process" of adaptive and coping behaviors has strong points in common with the CCHIP analysis of coping behaviors, and both are conceptually linked with Basiotis' approach—based on the economic theory of consumption—to analyzing household behavior under severe resource constraint. Recent work at Cornell further validates the measures developed against measures of household dietary characteristics and socioeconomic status (Kendall et al. 1994, Olson et al. 1995).

OBJECTIVES AND METHOD OF MEASURING FOOD INSECURITY/HUNGER

To move from the LSRO conceptual definitions of hunger and food insecurity to a measurement approach and operational definitions based on the current body of research experience, three key issues must be resolved. The first is how to treat those aspects of food security, such as access to

safe food, that are a concern for households at all income levels. The second is whether to limit the operational definitions of hunger and food insecurity to aspects that can be captured in household survey data or to build a measure based on a composite of household- and community-level data sources. The third is whether indicators of nutritional inadequacy—the other important "potential, although not necessary, *consequence* of food insecurity" in the LSRO definitions—also should be incorporated into the operational definition and measurement of food insecurity. In resolving each of these issues, the FCS research team kept the new measures' anticipated primary uses for administrative and policy purposes firmly in view (Habicht and Pelletier 1990, Habicht and Meyers 1991).

From a policy perspective, the essential elements of food security . . . are those that are clearly linked with resource constraint or poverty."

On the first issue, the decision was made to limit the measure to poverty-linked or "resource-constrained" food insecurity and hunger. This decision is consistent with the primary use for which the measure is intended—to inform social policy. The LSRO definitions do not explicitly restrict the concepts of food insecurity or hunger to conditions arising from economic deprivation. Food insecurity can stem from such other sources as limited personal capacity (illness, infirmity) or limited availability of "nutritionally adequate and safe foods" in the community at large. Similarly, simple physiological hunger, "the uneasy or painful sensation caused by lack of food," can result from dieting, fasting, or simply being too busy to eat as well as from poverty or near poverty.

From a policy perspective, the essential elements of the concept of food security as defined by LSRO are those that are clearly linked with resource constraint or poverty—being hungry but not eating *because* one cannot afford to buy or otherwise obtain sufficient food. In this perspective, "ready availability of nutritionally adequate and safe foods" is a function of adequate household resources. Likewise, the measure of hunger is limited to the experience of hunger when forced by the household's economic circumstances. The term hunger is used consistently in this way throughout this work, with the qualifying terms "poverty-linked" and "resource-constrained" indicating this focus of our measurement objective.[14]

On the second issue—whether to limit the operational definition of food security to those aspects adequately captured in household-level survey data or to use household data in some combination with community-level data—the decision was made to base the measurement approach on household survey data alone, although these data are limited in some respects. To measure broader dimensions of food security such as quality and availability of food supply, emergency feeding facilities, and most

food safety concerns, community-level data would be more relevant (Morris et al. 1992, UCLA 1994, Cohen in USDA 1995, Winne in USDA 1995). Moreover, household data largely exclude homeless persons, one of the least food-secure segments of the population. As a result, estimates of the prevalence of food insecurity and hunger for the total population based on household data alone will reflect an inherent downward bias.

However, measures based on household-level data are valid for a very large majority of the population, and adjustments can be made for the omission of homeless persons so that final estimates reflect the entire population. Moreover, for the purpose of tracing time trends in prevalence, the limitations of household-based data are much less critical. Finally, at this stage of our knowledge, a direct measure of food insecurity and hunger based on household survey data derives a great advantage from building on the methodology and insight developed over a decade of nongovernment research and field experience. Adapting these tested methods to large-scale national surveys is a logical and important next step in obtaining consistent, reliable national baseline data on food security and hunger in the U.S.[15]

"Potentially harmful circumstances in addition to malnutrition also correlate closely with hunger in its social sense."

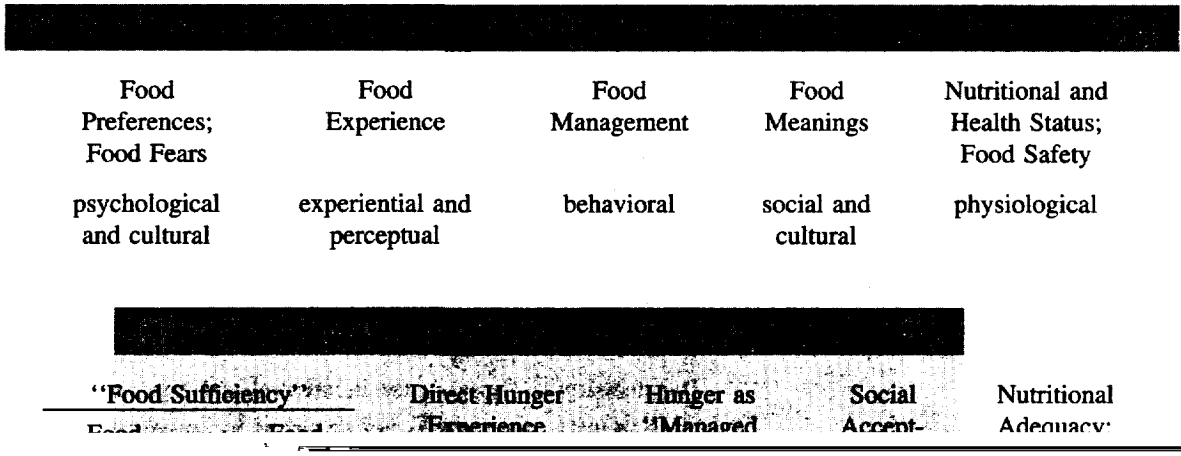
The third key issue is whether indicators of nutritional inadequacy of diets as well as hunger indicators should be incorporated into the operational definition and measurement of food insecurity. The nutritional aspect has long been the primary focus of interest. Nutritional inadequacy is known to correlate with hunger (see, for example, Cristofar and Basiotis 1992), and the effort to collect data on the nutritional composition and quality of diets has a long history. However, potentially harmful circumstances in addition to malnutrition also correlate closely with hunger in its social sense. For example, cyclical or episodic undereating/overeating, humiliation, and anxiety are among the conditions almost always associated with poverty-linked hunger that may contribute to obesity, depression, and other harmful effects on health and social well-being.

The decision to focus on the behavioral and experiential dimensions of the food-security concept was not designed to ignore the potential nutritional and health consequences but to characterize the condition of food insecurity as it is experienced and understood by the persons affected. In order to examine the *relationships* between those phenomena, on the one hand, and their nutritional and health consequences on the other, an *independent* operational definition and measurement of the former, direct aspects of food insecurity and hunger is required. Once such a measure is available, it will facilitate research into the nutritional and health consequences of hunger and food insecurity.

Figure 1 illustrates the range and complexity of the food security concept and compares it with the somewhat narrower range forming the objective of the current measurement effort. The upper block encompasses all elements of the concept, their respective domains (e.g., psychological, behavioral, physiological, etc.), and some of the chief phenomena or conditions that characterize each. The elements placed centrally represent the implicit core of the food security/insecurity concept and are linked in essential ways to the adequacy of individual and household resources for meeting basic needs, including the need for food. In contrast, the elements placed at the edges (psychological, cultural, and physiological) represent aspects of food security that are of concern to persons and households at all levels of income or resource adequacy. They are not so intrinsically linked to conditions of resource constraint or poverty.

The lower shaded block in Figure 1 indicates the range of elements in the FCS food security measurement design. Each of these was identified and developed in earlier research; each represents a particular dimension or facet of the actual experience of food insecurity and hunger among vulnerable segments of the population. For each category of elements (food quality—diminished variety and food value; food quantity—

Figure 1. Range and Complexity of Food Security Concept and Comparative Range of FCS' Food Security Measurement Design



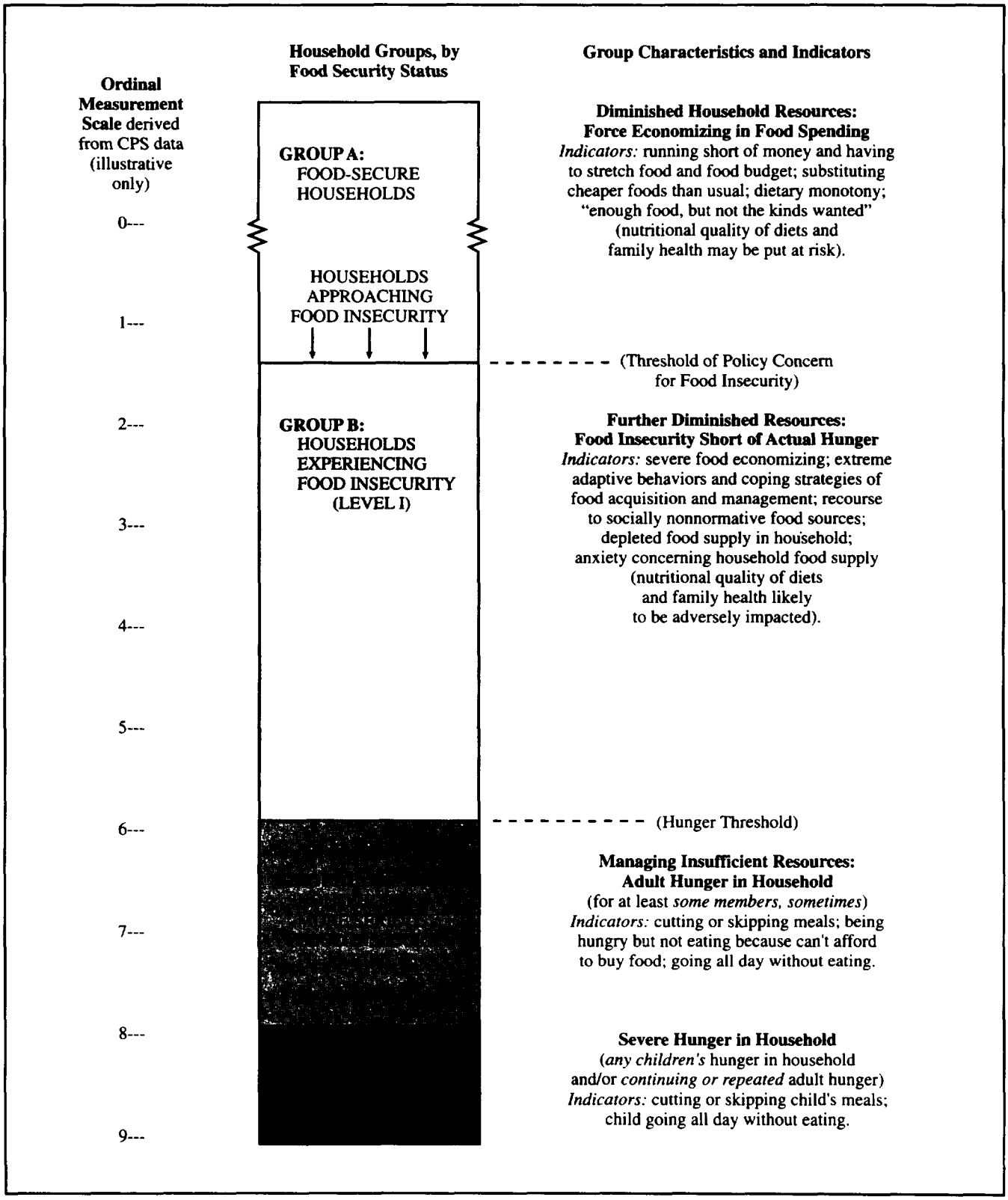
"The FCS data collection instrument has indicator items to identify . . . [each] dimension of food insecurity and hunger in vulnerable segments of the population."

diminished food supply; direct hunger experience; hunger anxiety; hunger as a managed process, series of coping measures; social acceptability of food sources), the FCS food security data collection instrument includes specific indicator items to identify that condition or experience in the household.[16]

Once the basic decisions were made on how best to operationalize the LSRO concept in data collection, the final issue to be resolved was how to estimate the prevalence of food insecurity and hunger from the data. Operationalizing the resource-constrained hunger concept as a subdomain of food insecurity fits well within a uni-dimensional measurement perspective. In this view, resource-constrained hunger is not only a "potential . . . consequence" of food insecurity, but also a salient and identifiable *characteristic* of a *severe level* of food insecurity. The measurement tool required is thus a *measurement scale* applied across all observed levels of severity of the phenomenon and from which prevalence estimates of the condition at its *various levels* of severity can be derived. The resulting measurement may be interpreted as a mapping of the several dimensions of actual complexity of the phenomenon onto the single dimension of relative severity. The underlying complex dimensions of the phenomenon in effect overlap one another in the single dimension measured.[17]

Figure 2 illustrates several aspects of FCS' conceptual approach to measuring the levels of severity and prevalence of resource-constrained food insecurity and hunger. While the figure identifies the population categories (Groups A, B, C, and D) that will be distinguished by the new food security measure, it only suggests a reasonable sequence of the indicator items that may appear in the measurement scale. In this illustration, the first population group (Group A) consists of households not indicated to be food insecure by the criteria of the new measure and thus presumed to be food secure. The other three groups consist of households that all show indications of food insecurity to a greater or less degree, as operationally defined by the new measure. Group B households are at the lightest level of severity measured. They are food insecure according to a combination of indicators, but signs of actual hunger among household members do not appear. Group C includes "hungry households" in the sense that indicators of hunger are positive and prevalent for one or more adult household members. Group D includes households that show positive hunger indicators for any children in the household and/or households with multiple or repeated indications of adult hunger.

Figure 2. Operationalizing the Measurement of Food Insecurity and Hunger: Characteristics of Households Approaching Food Insecurity and at Successive Levels of Severity of Food Insecurity



The scale at the left side of Figure 2 (illustrative only) is similar to the measurement scale currently being developed by FCS from the April 1995 CPS food-security data. The values for the actual scale will depend on the actual patterns and sequences of household food and resource conditions and responses to these among the survey households. The cut-off points, or thresholds, on this scale of relative severity that will separate and identify the four household groups designated for measurement will be determined in conjunction with the construction of the scale itself. Judgement will come into play in determining the exact placement of these cut-off points. However, the measurement scale itself, based on well-established analytic methods, will be determined by the actual data on the survey households' food conditions, experiences, and behaviors. Across the entire group of households, these conditions and responses fall into a clear, scaleable pattern—i.e., as the conditions in households become more severe, the responses become more pronounced. The scale thus has an objective basis; what it is measuring (relative severity of food insecurity) is an objective phenomenon, falling into clearly observable patterns, independent of any particular household's detailed, unique circumstances and response.

The column at the right side of Figure 2 shows some of the typical circumstances and responses of households in each of the three groups of food-insecure households. For example, households that are food insecure but not hungry (Group B) will typically report coping efforts (e.g., borrowing money for food or avoiding paying other bills to buy food, seeking groceries from food pantries, sending children to friends' or relatives' homes for meals) and conditions of food insufficiency (e.g., inadequate food supplies to make meals and anxiety about this condition). The top block in the column identifies typical characteristics and responses for households that are not identified as food insecure by the criteria, but that are close to that cut-off point.

DEVELOPING THE NATIONAL SURVEY INSTRUMENT

In 1993, FCS drafted a preliminary food security questionnaire, guided by the measurement objectives described above and helped by an active interagency working group. This preliminary draft was intended to cover the central elements of the LSRO food security concept while drawing to the fullest extent possible on the established questions and indicators developed and tested in the existing body of research. In January 1994, FCS convened an expert technical conference in Washington, D.C., jointly with the DHHS Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS). The purpose of this conference was to solicit critical advice and guidance from the most experienced people in this research area on the essential next steps in

developing a reliable measurement of food security at the national level. A day-long workshop session and subsequent conference calls were devoted to the development of the draft questionnaire.[18]

Following the conference, FCS contracted with the Bureau of the Census to provide state-of-the-art testing and refinement of the questionnaire and to field the final version as a supplement to the April 1995 CPS. Throughout 1994, the bureau's Center for Survey Methods Research (CSMR) collaborated closely with the CPS branch and FCS to prepare the survey instrument for field testing, analyze the pretest results, and make final revisions as needed.[19] In August 1994, the bureau pretested the instrument with approximately 400 households from the regular CPS sample.[20]

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The resulting questionnaire consists of 58 items grouped into four sections. The questions in Section I ("Food Shopping") are asked of all CPS households. This section surveys food shopping patterns, expenditure levels, and participation in national food programs.[21] Sections II through IV contain the set of candidate items to be considered in scale construction. The section names are descriptive but do not convey the substantive basis of the items included ("Food Sufficiency," "Coping Mechanisms and Food Scarcity," and "Concern About Food Sufficiency"). These sections may be viewed as a coordinated set of scalable indicators designed to capture the full range of severity of food insecurity. They are derived from a combination of substantive, practical, and survey-method considerations.

Although most of the final items are adapted directly from the existing body of research, there are some exceptions. First, questions from more specialized or in-depth surveys, some of which had very small samples, had to be modified to meet the operational requirements of the more efficient and burden-sensitive very large-scale CPS, which is administered monthly by approximately 1,600 regular staff field interviewers of the U.S. Bureau of the Census.

Second, the complete range of candidate items available from the research literature had to be "winnowed down" considerably because of practical considerations. The criterion for this selection process was that the resulting indicator set, although more limited than either the Cornell or CCHIP antecedents, had to provide a sufficient empirical basis for constructing a valid and reliable measurement scale for the full range of severity of food insecurity/hunger, as experienced and reported by the CPS respondents.

Third, detailed considerations of recommended survey method provided by CSMR were brought to bear on the questionnaire format, sequence, skip patterns, wording, and at virtually every important point of questionnaire design. State-of-the-art survey methods sometimes conflicted with essential substantive requirements for the data. For example, time reference periods based on the past 30 days and on the past 12 months are essential for their relevance to cycles of household resource acquisition, program participation, and other key variables (e.g., official U.S. poverty measures).

Survey principles indicate that respondent recall might be more accurate with shorter reference periods. Acceptable compromises between substantive data needs and survey-method requirements were reached in all cases.

"The survey elicits information on how households manage food and resources when [resource constraint] causes at least some household members to be hungry."

Section II of the survey ("Food Sufficiency") contains items on the amount of food eaten in the household and reasons for an insufficient food supply. The following three items in this section function as basic screening items for Sections III and IV: sometimes or often not having enough to eat, running short of money for food, and running out of food to make a meal without money to get more.[22]

Section III ("Coping Mechanisms and Food Scarcity") contains a combination of 35 behavioral and other items that reflect typical stages of food insecurity and hunger within households, or hunger as "managed process" (Radimer et al. 1992). These items elicit information on how households manage food and resources to buy food when both are approaching or have reached levels low enough to cause at least some household members to be hungry. For example, typical responses may include borrowing money for food, putting off paying bills to buy food, and seeking emergency food sources. At more severe levels, adults cut back on or skip meals and go full days with no food.

Section IV ("Concern About Food Sufficiency") includes six statements for which respondents report whether or not the statement is true for them.[23] These items reflect the food situation in the household and respondent perceptions or states of mind that typically indicate an insufficient household food supply; for example, "(I/we) worried that (my/our) food would run out before (I/we) got money to buy more—was that often, sometimes, or never true for you in the last 12 months?" Three of these items are directed specifically to households with children; for example, "(I/we) relied on only a few kinds of low-cost food to feed (child's name–the children) because (I was/we were) running out of money to buy food—was that often, sometimes, or never true for you in the last 12 months?"

DATA COLLECTION AND PLANS

Census Bureau interviewers administered the questionnaire to 53,665 households from April 17 to April 22, 1995, as part of the April 1995 CPS. Approximately four-fifths of the interviews were conducted by telephone, and one-fifth were held in person. Census and FCS staff observed in the phone interviews that all items were understood by nearly all respondents. Only a few instances of item nonresponse and miscellaneous errors of other kinds were observed.

A total of 44,730 respondents completed the questionnaire, 15,662 of whom reported a household income below 185 percent of poverty. The overall nonresponse rate for the supplement was 16.6 percent; that is, 16.6 percent of the April CPS respondents declined to answer the Food Security Supplement questions. This rate was higher than expected but congruent with unusually high nonresponse rates observed in the monthly CPS supplements generally since December 1994. For example, the rate for the March Income Supplement was 13.8 percent. Item nonresponse rates for the Food Security Supplement completed interviews were negligible.

In September 1995, FCS awarded a contract for extensive analytic work, beginning the process of analyzing the data from the April Food Security Supplement. Findings from this analysis will be released in two publications. The first, a summary report that will include all final measures and estimates, is intended for a broad, nontechnical public audience. The second will be a comprehensive technical report including detailed documentation and explanations of the methodologies, procedures, and steps leading to the measures and estimates.

"Other research . . . will identify essential indicator items needed to obtain reliable measures of food insecurity and hunger for use in various future surveys."

Other research conducted under the contract will identify several "core sets" of the essential indicator items needed to obtain reliable measures of food insecurity and hunger for use in various future surveys with more limited space. Federal agencies that have been involved in the FCS/NCHS Interagency Task Force are also planning related descriptive and multivariate analyses to validate and describe the new food security measurement scale. For example, Bureau of the Census will analyze the new measures based on the CPS April supplement in conjunction with the detailed poverty data from the CPS March Income Supplement. The CSMR will evaluate the quality of the April supplement data in terms of the same criteria applied to the August 1994 pretest data (Singer and Hess 1994). FCS plans to compare household food expenditures as reported in the CPS supplement with those reported in the Bureau of Labor Statistics' Consumer Expenditure Survey for a comparable period.

SUMMARY AND CONCLUSIONS

Developing the Food Security Supplement and the associated measures of food insecurity and hunger has been a collaborative, consensus-building process among a large group of agencies and individuals. The contributions of many people in the participating federal agencies and in the nongovernment research community were essential at each step in the process. Drawing heavily upon this assistance, FCS has completed the following stages of development for the new measures:

1. Determine the state-of-the-art measurement technique for the conditions of poverty-linked food insecurity and hunger and the scientific consensus on how best to conceptualize and measure those conditions.

2. Draw upon the widest available expert advice and assistance to develop a survey instrument for collecting the data needed from which to reliably measure food insecurity and hunger.

3. Contract with the U.S. Bureau of the Census to test and refine a survey instrument and field this new instrument as a supplement to the April 1995 CPS; that is, make use of the CPS to collect a large, representative national sample of basic data on food insecurity and hunger in the U.S.

4. Contract with an expert private-sector research team to analyze the new CPS data, with the specific assignment to (1) construct valid and reliable scaled measures of food insecurity and hunger from the data and (2) estimate and report the prevalence of food insecurity and hunger within the population at each of three specified broad levels of severity.

The significance of these development activities will become evident when the national estimates of the prevalence of hunger and food insecurity in the nation become available. The close scrutiny, analysis, and criticism that these measures and estimates are expected to receive will also make evident the extent to which FCS has achieved its objective of developing the most valid and reliable state-of-the-art measures currently possible.

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NOTES

1. The authors are professional economists and were program analysts in the FCS Office of Analysis and Evaluation when this paper was written, where they made up the FCS food security research team. Bruce Klein has since joined the staff of the USDA Center for Nutrition Policy and Promotion. Sharron Cristofar also was a key team member in the formative phase. Critical feedback on this work was provided at many points by Steven Carlson, Bob Dalrymple, Ted Macaluso, and by many other government and nongovernmental research colleagues. Helpful comments on this paper were provided by many people, including Ronette Briefel, Thomas Fraker, Alana Landey, Linda Neuhauser, Mark Nord, Christine Olson, Richard Scott, and Cheryl Wehler. Final responsibility for the judgments expressed are shared solely and equally by the authors.

2. These efforts were undertaken, in part, to fulfill the objectives of Activity V-C-2.4 of the Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program (NNMRRP, 1992): "Recommend a standardized mechanism and instrument(s) for defining and obtaining data on the prevalence of "food insecurity" or "food insufficiency" in the U.S. and methodologies that can be used across the NNMRRP and at State and local levels." This responsibility is assigned jointly to FCS and the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (DHHS).

3. A recent summary is provided in Rose, Basiotis, and Klein (1995).

4. Limited food security indicators had been included in USDA and DHHS national surveys, most fully in the Third National Health and Nutrition Examination Survey (NHANES III) fielded in 1988–94.

5. Participating agencies include the following: from USDA: FCS, Center for Nutrition Policy and Promotion, Economic Research Service, Agricultural Research Service, and the Cooperative Research and Extension Service; from DHHS: NCHS, CDC, and the Administration on Aging; and the Bureau of the Census, CPS Branch.

6. This food-sufficiency question, originated by Betty Peterkin of the USDA Consumer and the Cooperative Research and Food Economics Institute (predecessor to Human Nutrition Information Service), asked respondents, "Which of the following statements best describes the food eaten in your household: (1) enough and the kind wanted to eat; (2) enough, but not always the kind wanted to eat; (3) sometimes not enough to eat; and (4) often not enough to eat." By design, the question asks respondents to consider both qualitative and quantitative dimensions of their household food supply. The food-quality response category provides an indication of potential food insecurity short of actual hunger. The quantitative response categories provide an indicator of food insufficiency or, potentially, of actual hunger in the household.

7. Studies aimed at measuring or estimating hunger prevalence numbering in the hundreds were carried out in the U.S. during this period (Margen and Neuhauser 1987, Cohen and Burt 1989). By 1988, studies of hunger had been authorized by either the governors or legislatures of at least 18 states. For a review of these latter efforts, see Nestle and Guttmacher (1992).

8. "It is easy to think of examples of this kind of hunger: children who sometimes are sent to bed hungry because their parents find it impossible to provide for them; parents, especially mothers, who sometimes forego food so that their families may eat; the homeless who must depend on the largess of charity or who are forced to scavenge for food or beg; and people who do not eat properly in order that they save money to pay rent, utilities, and other bills." *Report,* p. 36.

9. See Brown (1987) and Cook and Brown (1992).

10. The wording of the food-sufficiency question evolved slightly through several rounds of USDA's Continuing Survey of Food Intakes by Individuals (CSFII). A more basic

15. Some additional definitional issues or conventions also must be addressed in developing prevalence estimates of hunger derived from household data. For example, the number of *individuals* experiencing resource-constrained hunger will differ from the number of *households* within which at least *some* members (maybe only one) are experiencing hunger.

16. The lower shaded block is purposely drawn to bisect the "food quality dimension" of food sufficiency. This is intended to suggest that certain aspects of food quality choice are relevant to the measurement of food insecurity because forced by resource constraint (e.g., eating only a few low-cost foods for several days in a row because lacking money to maintain the household's usual dietary pattern), but that other aspects (purely personal or cultural preferences within the normal diet) are not relevant to this measure.

17. This expected "overlap" among the various dimensions of food insecurity can result in both real and apparent redundancy among indicator items intended primarily to capture the single dimension of relative severity of the phenomenon. The CPS instrument was designed to eliminate genuine redundancy among items, while including enough items to cover the single dimension of severity in its expected full range, as revealed in the research literature. Thus, every item retained is an important potential candidate for inclusion in the measurement scale currently being developed from the CPS data, although only a subset of all these "candidate items" will in fact be included in the final scale. The price of parsimony in the set of indicator items may be some loss of coverage of the complex dimensionality of food insecurity and some loss of stability in the resulting measurement scale.

18. See USDA (1995) for the full report of this conference.

19. CSMR's work on the food-security questionnaire was directed by Dr. Eleanor Singer, Columbia University survey methodologist, who was assisted by Jennifer Hess of the CSMR staff. A panel of independent survey-method experts was convened at the initial stage by CSMR to review the FCS draft instrument. This panel included Jon Krosnick, Ohio State University; Jennifer Rothgeb, CSMR; Nora Cate Schaeffer, University of Wisconsin-Madison; and Roger Tourangeau, National Opinion Research Corporation.

20. For CSMR's detailed analysis and report of the pretest results, see Singer and Hess (1994).

21. Higher-income respondents were appropriately screened for questions on FSP, WIC, and similar program participation.

22. A major issue during the questionnaire pretest analysis and final revision concerned the combination of screening questions used to determine which respondents would be asked the food-insecurity/hunger questions of Sections III and IV. The basic screening criterion is resource-constrained households, defined in the final instrument as households reporting an annual income below 185 percent of poverty. However, preliminary analysis by NCHS staff of closely related food-insufficiency indicator questions in NHANES-III data indicated that nontrivial numbers of households reporting annual incomes above 200 percent of poverty nevertheless showed one or more positive indicators of food insecurity, based on the more specific items. Analysis of pretest data led to a relatively efficient combination of screener items for households of this type, striking a balance between "too loose" a screen (admitting false-positive households above 185 percent of poverty) and "too tight" a screen (excluding false negatives).

23. This particular method is the one recommended in the Cornell work, which has found it to be a more natural way than direct yes/no questions for respondents to get at this range of experience (Radimer et al. 1992, Olson et al. 1994).